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THE SHATTUCK LECTURE.*

EPIDEMIOLOGY AND ETIOLOGY OF INFLUENZA.

BY ALLAN J. McLAUGHLIN, M.D., WASHINGTON, D. C.,
Assistant Surgeon-General, U. S. Public Health Service.

THE paucity of facts, especially of etiological facts, might stamp influenza as an unwise selection as a subject for this lecture. It is true that doctors prefer dogma to conjecture, and definite procedure to advice on general principles, but few dogmatic statements can be made concerning etiology, prophylaxis or treatment of influenza.

While it cannot be proven there is every reason for believing that influenza is a disease of great antiquity. From a period of four centuries before the Christian era accounts are found of a plague or epidemic which may have been influenza. The description of these earlier epidemics is too vague to warrant any positive conclusion.

From the sixth to the tenth century numerous epidemics are recorded with history of cough and catarrhal symptoms which are more suggestive of influenza. Hirsch[1] in his tabulation of influenza epidemics or pandemics excludes those prior to 1173 as too indefinite and uncertain to serve any useful purpose in his compilation.

There is not only uncertainty as to the nature of the disease but obviously the tabulation must be incomplete, as many epidemics occurred of which we have no record. Thus, many of the intervals shown in Hirsch's table may not have been quiescent periods but simply evidenced failure to record epidemics. No safe deductions as to cycles or periodicity can be made in these years from the 12th to the 18th century. Noah Webster[2] describes the first American epidemic in 1647 and compiles a table of epidemics from 1174 to 1797. Webster coupled the epidemics in each instance with a volcanic eruption, earthquake or some unusual climatic condition.

Webster made many interesting comments on the epidemiology of influenza. He noted that the epidemics were sometimes limited to the American continent and that contrary to usual custom in certain pandemic years, the disease beginning in America spread to the entire world. In 1698, 1757, 1761 and 1781, "it spread over the American hemisphere one year prior to its pervading the other hemisphere." In regard to incomplete records, Webster says:

"I regret my want of materials to complete a view of this subject. No regular register has been kept in America, of the seasons, diseases and phenomena, from the first settlement, and whether any notices of all the catarrhs in this country are in existence, I do not know. I have found no accounts of any, between 1655 and 1698—nor between the latter year and 1733. One of these instances, that in 1698, came to my knowledge by accident, as I have mentioned under that year, in the foregoing history. From the uniform appearance of this epidemic as often as once in ten or twelve years, in other periods, we have ground to believe, it has always occurred in nearly the same periods."

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* Delivered before the Massachusetts Medical Society, June 8, 1920.

As to the date of the first authentic epidemic of influenza there is much difference of opinion.[3] Hirsch places it as 1173; Webster 1174; Zerviani 1239; Gluge 1323; Schmeich, Haeser and others 1837; Thompson, Zulzer and Seifert 1510. Since 1510 detailed descriptions are more often available and little doubt exists as to the identity of the first real pandemic in 1580 and the pandemic in the Western Hemisphere 1647, described by Webster. In the 18th century besides rather widespread epidemics in 1709-12, there were decided pandemics in 1729, 1732, 1742, 1757-8, 1761-2 1767, 1781-2, 1788-90 and 1799.

In the 19th century because of a greater availability of detailed information we are on firmer ground and we begin to find clear pictures of pandemics very similar to those known to the present generation.

In 1824-25-26 influenza was widely epidemic in the Western Hemisphere, and in 1827 was generally diffused in Siberia and Eastern Russia.

According to Hirsch, after three years quiescence in 1830-31 one of the really great pandemics spread over the entire world. Its course was chronologically China, Philippines, Polynesia, Borneo, Sumatra, Russia, Baltic Provinces, Poland, Germany, Austria, Finland, Denmark, Belgium, France, Sweden, England, Scotland, Switzerland, Italy, Spain, and, in January, 1832, North America.

After a quiescent period of one year this pandemic was repeated. Beginning in Russia in January, 1833, it followed a course from east to west almost identical with that of 1830-31.

Three years later, in the autumn of 1836, a pandemic spread over Australia, South Africa and the East Indies—and beginning in Russia in December spread all over Europe and was reported in Mexico in July, 1837. In 1841-2 influenza was epidemic in Germany, Austria-Hungary, Ireland, Belgium, England and France. In 1843 there was a widespread epidemic in the United States and in 1844 Germany, France, and Switzerland and Russia were stricken in the order named. This seemed to be a reversal of the usual geographic progression from east to west.

Apparently, according to Hirsch, there was pandemic prevalence in 1846-8, 1850-1, 1857-8, 1874-5. The same writer states that pandemics occurred exclusively in the Western Hemisphere in 1843 and 1873.

It is true that we have more accurate knowledge of influenza during the 19th century than at any previous period, nevertheless, for practical purposes the epidemiologist must not begin his study earlier than the great pandemic of 1889-90. It is not possible to compare recent epidemics with those occurring prior to 1889 except in the most general way.

In every phase of the subject the student finds not definite precise information but rather confusion and conflict in statement and in laboratory findings as well.

It is discouraging to the average reader and especially so to the health officer who needs and seeks instruments and agencies for combating the disease. However discouraging our present lack of knowledge, the magnitude of the problem and the certainty of its return warrant the closest study of such facts as are known, and a redoubled effort in research to clear up the etiologic points now in dispute.

I have selected the subject of influenza chiefly because of its tremendous potentiality for disaster on a large scale and the certainty that future visitations may be expected. It seems wise to review such facts and observations as we possess in the hope that an exposé of our utter helplessness may stimulate further research and give us weapons with which to fight this scourge.

As a demonstration of what did happen and of what may be expected to happen again we need consider only the appalling disaster of 1918.

Never in the history of influenza has such a death toll been exacted. It is probable that in the whole history of the world no parallel will be found for the tremendous catastrophe of 1918, if we consider the short space of time and the wide area of distribution in which the results were manifested. Statistics can never be accurate in such times of stress and world-wide estimates are notoriously inaccurate, but the data indicate that in four months a half million lives were sacrificed in the United States and that in the entire world this particular pandemic was responsible for not less than six million deaths.

At best our statistical data are far from ideal. We would prefer to have morbidity to mortality statistics, but they are so incomplete that they are practically useless. Many objections can be made against the use of mortality statistics but the fact remains that with proper corrections they afford us the best indices available for large areas.

The use of influenza mortality statistics alone is misleading because of the fact that the majority of deaths are not recorded as influenza. The combination of influenza and pneumonia deaths makes a much better index of the extent of damage done by influenza, provided we express this in terms of excess death rates, that is, the rate over and above the normal expectancy of mortality for the given period.

WAS THE INFLUENZA PANDEMIC OF SEPTEMBER-OCTOBER, 1918, DUE TO THE SAME CAUSE AS PREVIOUS EPIDEMICS?

That the influenza of 1918 is the same disease as described by authors in ancient and medieval times is incapable of proof although it is probable from the meager and indefinite description that many of the outbreaks so described were influenza. As to the identity of the 1918 outbreak with that of 1889-90 there is more definite evidence and the similarity, epidemiologically and clinically, is so striking that we must conclude that they were due to the same cause.

The epidemiologic similarity in the two pandemics is well shown by Frost,[4] and he considers that in the history of influenza we have cycles in which great pandemics alternate with periods of relative quiescence, the length of the interval between pandemics being usually a matter of decades.

Usually preceding a real world-wide pandemic there are prepandemic increases in prevalence, amounting to considerable epidemics which have often passed unnoticed except in retrospect. The significance of these pre-pandemic waves is not clear although there is a natural tendency to connect them with the great pandemic rise which follows.

The special characteristics of the great pandemics are rapid spread, wide area of distribution and definite geographical progression along the most widely used routes of travel and trade. Such characteristics undoubtedly marked many of the historical epidemics tabulated by Hirsch and others, but are especially noteworthy in the pandemics of 1889-90 and 1918. These striking characteristics are lacking in the epidemics occurring in the interpandemic periods.

After a great pandemic such as '89-90 or 1918 there has been apparently such a thorough seeding of the population with the microbic cause that for years after outbreaks may occur anywhere whose spread is limited, and if the distribution is wide this seems more the development from many foci rather than an orderly geographic progression from a single source.

These post-pandemic outbreaks in succeeding years become more local and sporadic and bearing progressively less resemblance to the mode, rapidity and scope of spread of the real pandemic outbreaks.

On clinical grounds the similarity of the two great pandemics is no less probable. Kinsella[5] very positively states:

"Without doubt, the epidemic just past is of essentially the same nature as the epidemic of 1889. Then, as in the epidemic under discussion, clinicians recognized two phases or features in the disease: first, the 'influenza' proper, which lasted from three to seven days, and the complications which were regarded as secondary and not part of the original disease, though directly due to the damages that it caused. The descriptions of the disease, in England by Robertson and Elkins, in Germany by Strumpell, and in France by Duflocq, make these points clear."

Conceding the identity of the great pandemics 1889-90 and September-October, 1918, there is still doubt expressed by some as to their relationship to the relatively mild interpandemic outbreaks.

The catastrophe of September-October, 1918, is so sharply differentiated from ordinary epidemics of influenza that some have suggested that it is due to an entirely different cause. They have not gone so far as to assume that this etiologic factor was not responsible for some previous epidemics of so-called influenza but are slow to believe that the etiologic factor responsible for the comparatively mild outbreaks is the same as that which caused the pandemic of September-October, 1918. Kinsella says:

"Perhaps the simplest and most obvious inference that can be drawn from a consideration of the epidemic of influenza that has just passed through this country is that it was something unusual, something that had not been seen for many years, and something that has departed leaving few representative cases that can ever be regarded as typical instances of the disease. Whatever the cause of the disease may be, it is clear that this agent is one to which the body is not accustomed. In fact, it would almost seem necessary to postulate at the outset that this agent is not commonly present in the body under normal circumstances, because it is difficult to conceive that any bacterium or virus that is even partially adapted to the environment of the human body should suddenly become unadapted and assume such a high degree of invasiveness as the agent of influenza possesses. Moreover, if the cause of influenza is some bacterium or virus related to a variety of bacterium or virus commonly present in normal individuals, then it would seem necessary to postulate that the cause of influenza is a very highly individualized variety."

Other writers have found difficulty in believing that the organism causing influenza in interpandemic periods, such as the mild epidemics of March, April, 1918, could so completely change as to become the cause of the frightful mortality five months later. These observers have been prone to ascribe the pandemic to virulent strains introduced from abroad.

Soper[6] inclines to the view that the organism or virus was introduced from abroad. He states that the disease was reputed to be epidemic in Spain in the early spring but that it was known to be present in the United States (Fort Oglethorpe) in March, 1918. In the latter part of March the disease appeared in the A. E. F., the French and British armies and the civil population. Many patients with influenza arrived in the United States upon ships from Europe in June, July and August, 1918. He cites many ships carrying influenza to our ports and concludes:

"The patients from the vessels were sent ashore and soon mingled with the civilian populations. There were thus scattered rather widely along the Atlantic seaboard sparks from which the pandemic not improbably arose."

Winslow and Rogers[7] suggest the same origin. From information furnished by Dr. T. E. Reeks, Connecticut State Department of Health, the following statement is made:

"Influenza first appeared as an epidemic in Connecticut in New London, in the eastern part of the State, on or about September 1, 1918, when several cases of the disease were reported by the naval hospital at New London. These cases came primarily from the experimental Station and Fort Trumbull, where vessels from foreign ports had discharged patients."

On the other hand, we must concede the possibility of an increased virulence of the strains of organisms responsible for the relatively mild prepandemic prevalence of March-April, 1918. Frost lays stress on the significant rise in general prevalence and the many definite local outbreaks in the spring of 1918 and concludes:

"The rise in mortality from this group of etiologically heterogeneous diseases in the spring of 1918 is so sudden, so marked, and so general throughout the United States as to point very clearly to the operation of a single definite and specific cause, something largely independent of meteorologic and other local conditions. The observed occurrence of local epidemics of influenza at that time in widely scattered localities, the intimate association established at Camp Funston between the epidemic of influenza and pneumonia, and the subsequent development of the influenza pandemic, all indicate that the increased pneumonia mortality of March and April, 1918, was the consequence of a beginning and largely unnoticed epidemic of influenza, and beginning, in this country, of the great pandemic which developed in the autumn."

GENERAL EPIDEMIOLOGIC CHARACTERISTICS OF INFLUENZA.

Prevalence Since 1889. For intensive study there is available for certain localities fairly complete data from 1889 to date. For Massachusetts we have the deaths from influenza and pneumonia by months from 1887 to date. This covers what may be termed one complete cycle or the period from one great pandemic to another, and it affords a basis of comparison between these two great pandemics.

Chart I shows the excess of annual death rates per 100,000 for influenza and pneumonia by months for Massachusetts from 1887 to 1919. After a quiescent period of several decades the pandemic beginning December, 1889, is manifest on the chart in three successive waves with highest point as follows: January, 1890; May, 1891, and January, 1892. That of January, 1890, being very high, that of May, 1891, considerably lower, and that of January, 1892, highest of all. As an aftermath of the great pandemic period 1889-1892, the chart shows a significant rise in epidemic prevalence in some month from January to April every year except 1898, 1902 and 1904, or in twelve of the fifteen years from 1890 to 1904. In 1905 and 1908 sharp rises are shown and an excessive prevalence from November, 1910, to February, 1911. From 1912 to 1914 the rates were probably as near normal as can be expected in the winter months. A noticeable rise took place March-April, 1915, with a higher peak in January, 1916, and lower peaks in March, 1917, and April, 1918, as if beginning a new cycle.

Chart II shows the annual excess death rates per 100,000 for forty-two large cities with an aggregate population of *about 22 million* by months from January, 1915, to August, 1918, inclusive. This chart very clearly shows the prepandemic rises in prevalence occurring each year in the winter and spring months, that culminating in the peak of April, 1918, being especially noteworthy.

There was then not only a regular prevalence in the winter and spring months every year but there was an epidemic prevalence in twenty-two out of thirty years and the longest period without epidemic prevalence was from February, 1911, to March, 1915, a period of four years. Further, beginning March, 1915, there has been an annual epidemic prevalence in the winter or spring months in 1915, 1916, 1917 and 1918, followed by the great pandemic of September-October, 1918.

PERIODICITY.

Early writers asserted that there was a definite periodicity in epidemic appearances of influenza. Brownlee[8] deduced from a study of influenza mortality that epidemics occurred in 33-week cycles, and he forecasted an epidemic for January or February, 1920.

Stallybrass,[9] using statistics for Liverpool since 1890, confirms Brownlee's deductions as to the 33-week cycle.

Speare[10] considers mortality statistics unsuitable, because of their great fluctuation, for analysis by the periodogram method employed by Brownlee and says that the 33-week cycle has no existence in fact.

Speare divided the years into 13 periods of four weeks each and tabulated the frequency with which the observed week of maximum mortality fell within one or the other of the thirteen groups.

By this method he shows that the bulk of the maxima fall within the months of February and March. He explains Dr. Brownlee's conclusions by the fact that there is such great variation in the amplitude of the waves. A single epidemic such as October, 1918, would overshadow and practically eliminate many smaller epidemics when analyzed by the periodogram method. He concludes that the average interval is about one year.

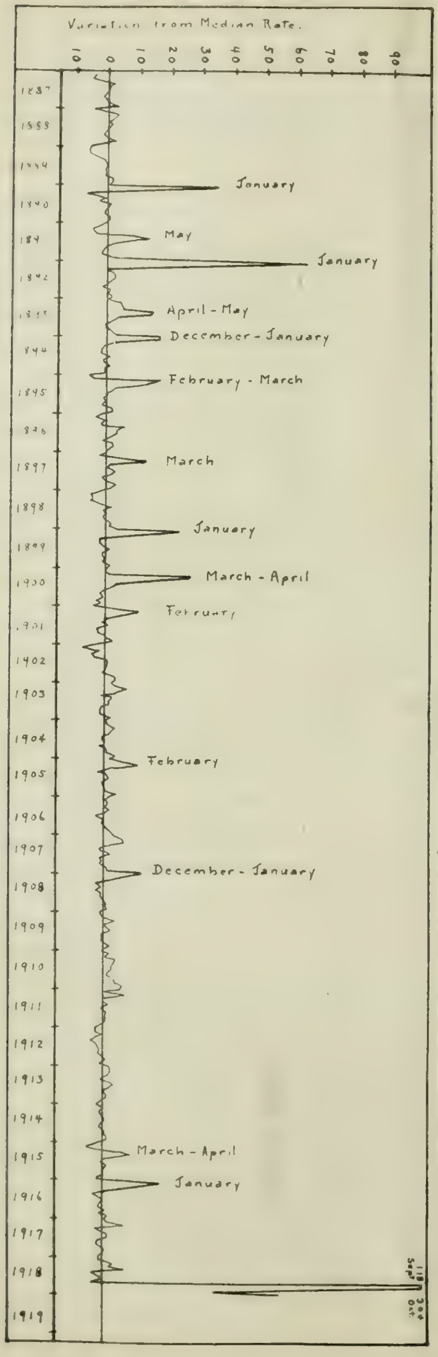
TABLE I.

ANNUAL DEATH RATE PER 100,000 AND VARIATION FROM MEDIAN RATE FOR INFLUENZA AND PNEUMONIA (ALL FORMS) FOR 42 LARGE CITIES INCLUDED IN THE WEEKLY HEALTH INDEX OF THE U. S. CENSUS BUREAU.

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
						ANNUAL DEATH RATE PER 100,000						
1915	231	264	296	284	151	114	76	67	77	106	153	354
1916	446	266	258	213	170	102	80	77	87	112	162	246
1917	389	346	303	246	204	115	75	69	91	129	178	235
1918	315	312	402	421	187	96	79	56				
						MEDIAN RATE (PER 100,000) FOR PERIOD 1910-1916						
	279	280	290	234	177	109	82	73	82	111	163	228
						VARIATION OF ANNUAL RATE FROM MEDIAN RATE.						
1915	—48	—16	6	50	—26	5	—6	—6	—5	—5	—10	126
1916	167	—14	—32	—21	—7	—7	—2	4	5	1	—1	18
1917	110	66	13	12	27	6	—7	—4	9	18	15	7
1918	36	32	112	187	10	—13	—3	—17				

CHART I.

MASSACHUSETTS EXCESS DEATH RATES FROM INFLUENZA AND PNEUMONIA, BY MONTHS, 1887 TO 1918.



SEASONAL.

While no claim for annual periodicity is made, a glance at Chart I reveals the remarkable predilection which influenza has for the winter and spring months.

Every significant rise on Chart I from 1887 to 1918 occurred in the months from December to May. The pandemic of September-October, 1918, was the great and only exception to this rule.

MORTALITY STATISTICS ACCORDING TO AGE AND SEX.

In the pandemic of 1889-90 Abbott[11] states that the deaths from pneumonia and acute bronchitis for the first two weeks in 1889 and 1890 in Paris were as follows:

AGES	FIRST TWO WEEKS 1889	1890
0—4	45	111
5—19	6	22
20—39	7	127
40—59	14	249
over 60	35	290

This table shows the excess of deaths to be chiefly in the age groups from 20 years upward. He presents other tables which show that in Paris the mortality in male adults was double that of female adults.

Parsons[12] shows that the deaths from influenza in London for the epidemic of 1847-8 and for the first quarter of 1890 occurred in the different age groups in the following percentages:

AGES	PERCENTAGE 1847-8	1890
under 1	10.5	5.2
1—5	13.1	4.3
5—20	3.8	4.7
20—40	8.6	24.7
40—60	18.5	36.2
60—80	16.9	22.4
above 80	8.6	2.5

Winslow and Rogers[13] analyzing statistics for Connecticut for the last four months of each of the years 1917-1918, show that the normal distribution of deaths in 1917 was 25% of all deaths occurred under 5 years; 25% occurred between 5 and 40 and the remaining 50% over 40. In 1918 the distribution was strikingly different; instead of 25%, between the ages of 5 and 40, this period included 49% of all deaths and 40% of all deaths occurred in the two decades between 20 to 40, as against only 17% in 1917. Considering influenza and pneumonia alone, the age period 20 to 40 included 56% of the deaths, while only 9% occurred in ages over 49. The decade 20-29 was most severely affected, including 30% of all deaths.

The high rates of influenza mortality in certain age groups may be either due to an excessive incidence of influenza, or to a very high case fatality rate within these age groups. It is therefore necessary to study the limited morbidity survey statistics available.

CHART II.

MONTHLY VARIATION IN THE DEATH RATE FROM INFLUENZA AND PNEUMONIA FROM THAT OF CORRESPONDING MONTH IN MEDIAN YEAR, IN 42 LARGE CITIES INCLUDED IN WEEKLY HEALTH INDEX OF U. S. CENSUS BUREAU.

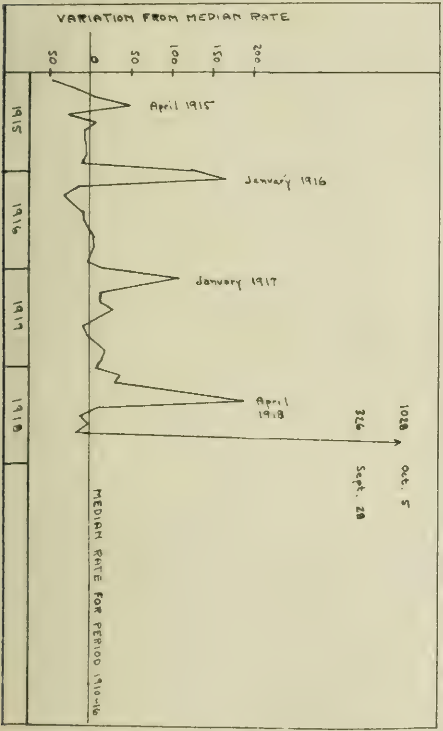
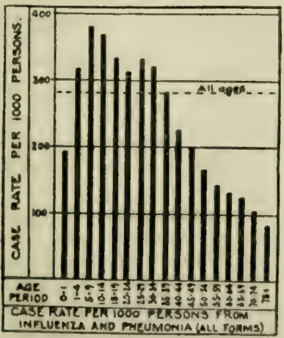
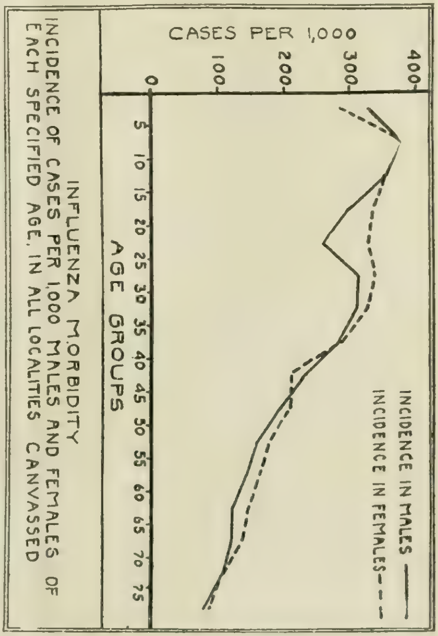


CHART III.



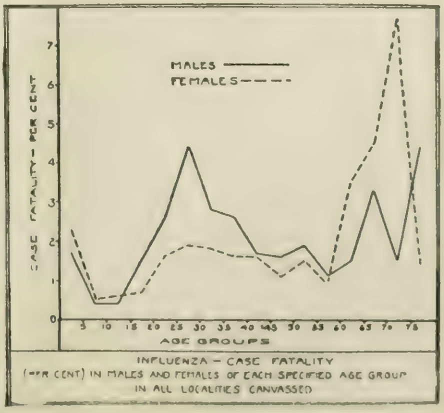
CASE RATE PER 1000 PERSONS FROM INFLUENZA AND PNEUMONIA (ALL FORMS)

CHART IV.



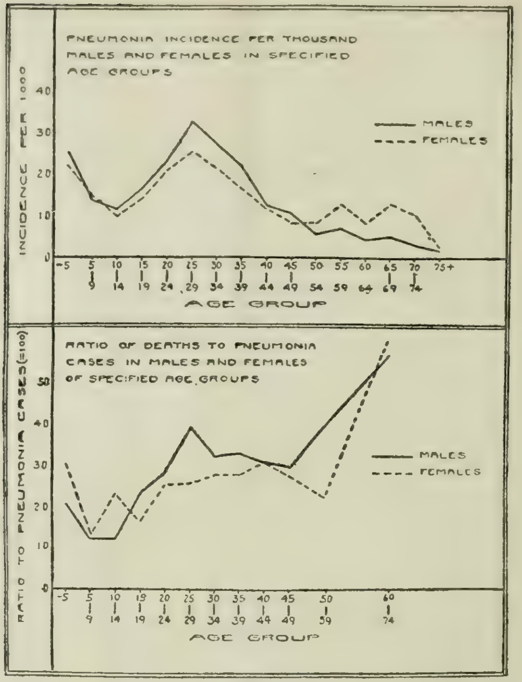
INFLUENZA MORBIDITY
INCIDENCE OF CASES PER 1,000 MALES AND FEMALES OF EACH SPECIFIED AGE, IN ALL LOCALITIES CANVASSED

CHART V.



INFLUENZA — CASE FATALITY (PER CENT) IN MALES AND FEMALES OF EACH SPECIFIED AGE GROUP IN ALL LOCALITIES CANVASSED

Chart VI.



MORBIDITY STATISTICS AS SHOWING GENERAL ATTACK RATE AND ATTACK RATE ACCORDING TO SEX AND AGE.

Frost[14] analyzed the results of a morbidity survey of 10 cities from 25,000 to 600,000 and in several smaller cities and rural areas in Maryland. His assistants canvassed at least 5,000 persons in the smaller cities and over 5% of the population of large cities. His work has great value as a check on the deductions made from mortality statistics alone, and confirms the approximate accuracy of many of these deductions.

Frost found that the attack rate varied from 150 to 405 per 1,000 population and the average for all communities was 280 per thousand. He found the attack rate was highest in the age group 5 to 9 (Chart III), declining in each successive higher age group, except 25 to 34, which exceeded the rates for the ages 15 to 24. With few exceptions he found the attack rate at all ages higher in females than males (Chart IV). He says:

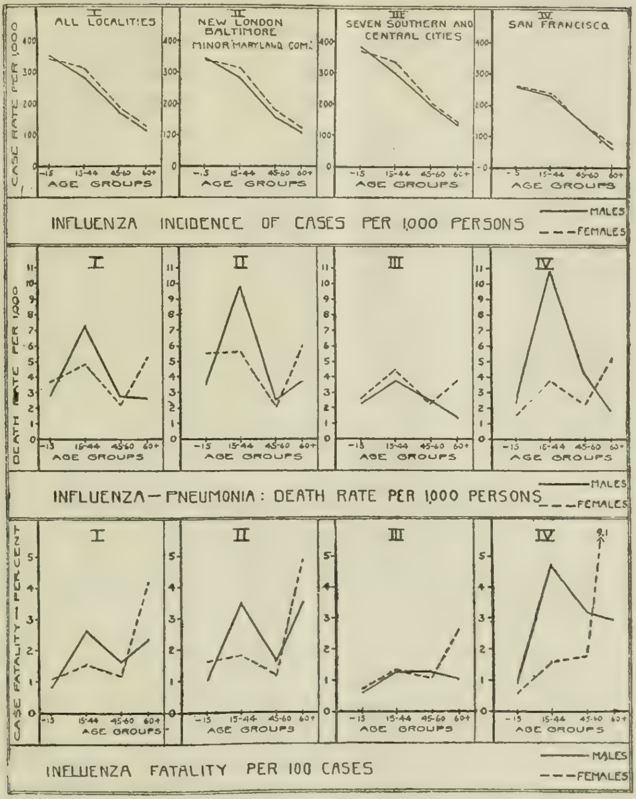
"The most striking excess of incidence in females occurs between the ages of 25 to 40, the difference between the sexes being relatively slight in periods above and below these limits. These facts indicate that females over the age of 15, especially betwen the ages of 15 to 45, were either more susceptible to infection or more generally and more intimately exposed than males of corresponding age."

CASE FATALITY RATE.

Frost found that the ratio of deaths to total cases of influenza varied from 3.1% in New London to 0.8% in San Antonio, the variations showing no consistent relation to incidence rates. He found that the case fatality rates were higher in the Northern Atlantic and Pacific coasts and lowest in Central and Southern cities.

In regard to sex and age he found remarkable differences. Chart V shows the case fatality under 15 was somewhat higher in females and over 60 very much higher in females; while from 15 to 60 there was a much higher case fatality rate in males. The lower case fa-

CHART VII



tality rate in females from 15 to 60 seems to be explained in part at least by the lesser incidence of pneumonia in this group (Chart VI).

Winslow and Rogers, from the reports of the New Haven Visiting Nurses' Association, conclude that the case fatality rate of 4.3 per 100 cases (736 cases—32 deaths) is too high since undoubtedly many light cases failed to receive nursing care. Winslow and Rogers also analyzed information supplied by Reeks from a survey in New Britain, Connecticut, and says these figures would indicate a morbidity rate of 234 per 1,000 and a fatality rate of 3.9 deaths per 100 cases. Here again they note that light cases were incompletely reported and that this rate is probably too high. They conclude that the attack rate in Connecticut was from 200 to 400 per 1,000 and the case fatality rate from two to four deaths per 100 cases, the higher morbidity and lower fatality rate being more likely to be correct (Chart VII).

RACE.

Winslow and Rogers made one striking observation in regard to race. They found that native Americans of Irish, English, or German descent had a relatively low mortality rate, while Slavic or Latin peoples had a very high mortality rate. They admit that the age distribution and economic environment account for some of the excess, but believe that these factors cannot explain the enormous differences which are shown by the Italian population.

DENSITY OF POPULATION.

Table II shows the total annual excess death rate per 100,000 influenza and pneumonia, and

CHART VIII.

EXCESS DEATH RATE EPIDEMIC PERIOD, SEPTEMBER, 1918--JUNE 28, 1919.

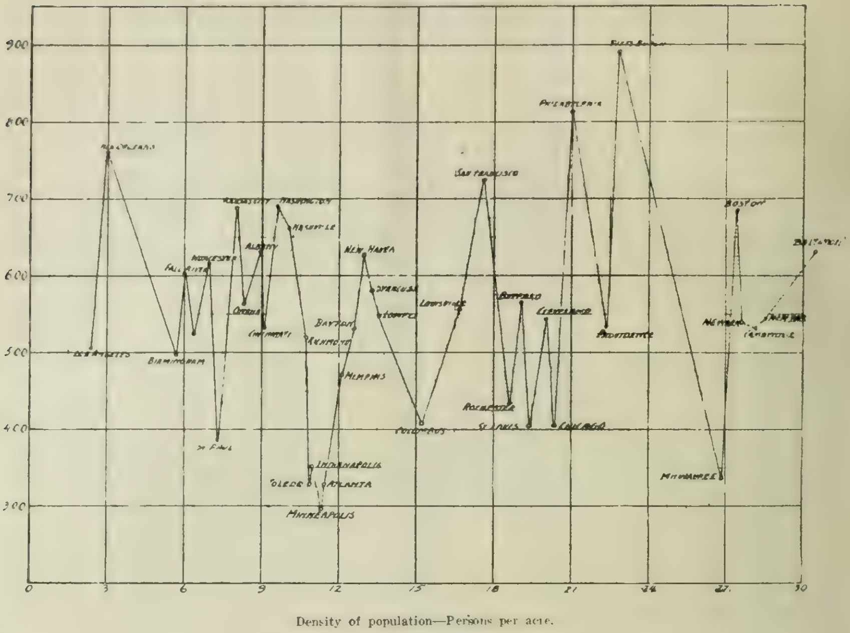


CHART IX.

VALUES FOR INDEX OF EXPLOSIVENESS.

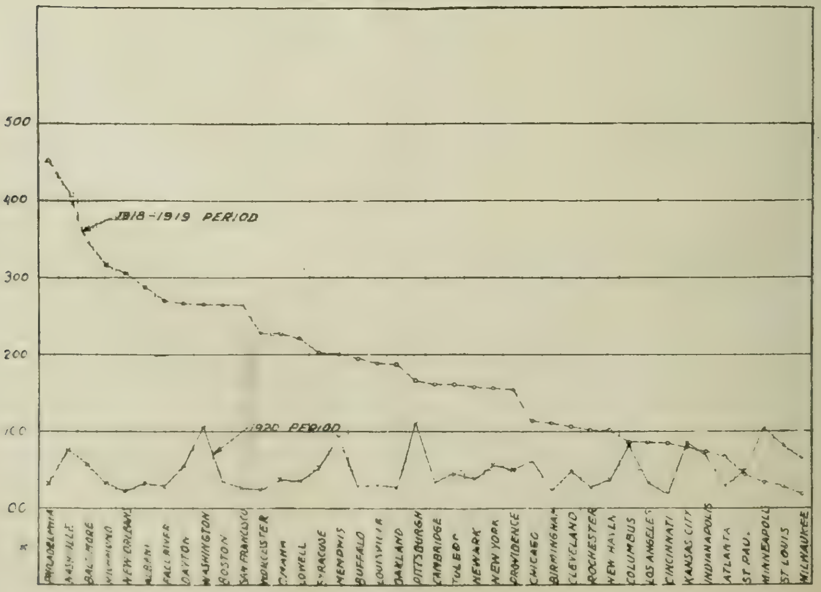


CHART X.
RELATIVE FIGURES—DEATH RATES.

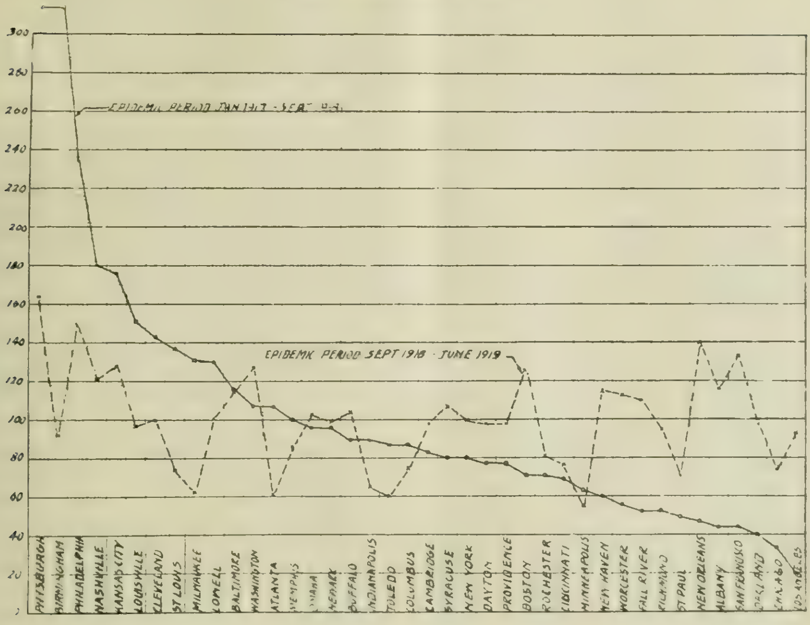
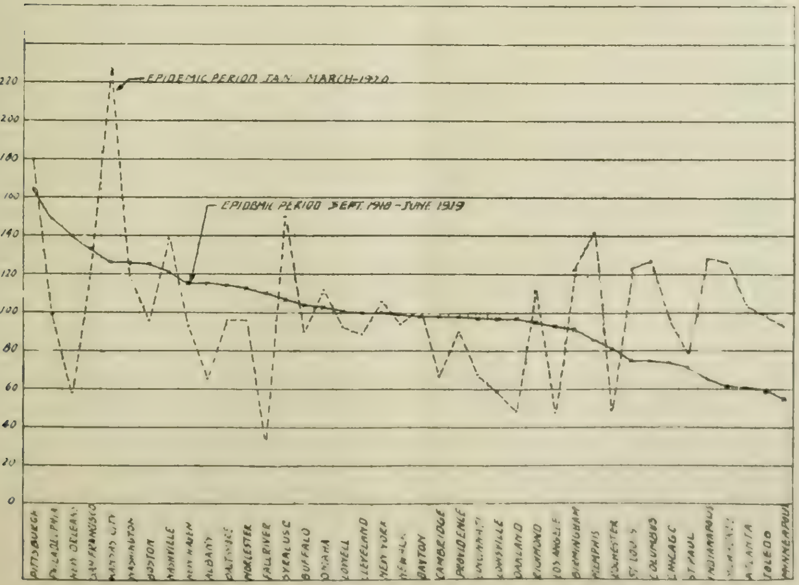


CHART XI.
RELATIVE FIGURES—DEATH RATES.



the density of population in persons per acre in 40 cities. Chart VIII shows graphically the lack of correlation between the curves of these two factors.

The group of cities with low density of population included some of the highest rates (New Orleans, Kansas City and Worcester). Conversely some cities with a high density of population had relatively low excess death rates (Milwaukee, Chicago and St. Louis).

Table II.

The Density of Population in Persons per Acre with Excess Deaths, Influenza and Pneumonia, All Forms, per 100,000, for Epidemic Period September 8, 1918, to June 28, 1919.

City	Density Persons per Acre	Excess Death Rate 1918-1919
Los Angeles	2.4	505
New Orleans	3.0	761
Birmingham	5.7	497
Fall River	6.0	602
Oakland	6.4	528
Worcester	7.0	618
St. Paul	7.4	386
Kansas City	8.0	689
Omaha	8.3	562
Albany	8.9	631
Cincinnati	9.1	531
Washington	9.6	689
Nashville	10.1	662
Richmond	10.8	520
Toledo	10.9	329
Indianapolis	11.0	354
Minneapolis	11.3	299
Atlanta	14.4	330
Memphis	12.1	470
Dayton	12.6	532
New Haven	13.1	629
Syracuse	13.3	580
Lowell	13.6	548
Columbus	15.2	409
Louisville	16.6	530
San Francisco	17.6	724
Rochester	18.6	433
Buffalo	19.0	567
St. Louis	19.4	406
Cleveland	20.1	546
Chicago	20.3	404
Philadelphia	21.0	814
Providence	22.4	534
Pittsburgh	22.8	891
Milwaukee	26.9	337
Boston	27.4	685
Newark	27.5	538
Cambridge	28.2	532
New York	29.5	544
Baltimore	30.6	629

Density of population is not always a reliable index of economic and sanitary conditions, although usually the most densely crowded cities have the worst housing conditions. Frost[15] attempted to find if any relation existed between overcrowding and poverty and a high attack rate. He found from a study of Little Rock, Arkansas, that the attack rate increased as the number of rooms per person decreased. He says that these limited statistics suggest that domestic environment is a factor of some importance in the influenza attack rate, the tendency being toward a higher morbidity under the complex of conditions associated with relative poverty."

VARIATION IN EXPLOSIVENESS AND EXCESS DEATH RATES IN FORTY LARGE CITIES.

A consideration of the epidemic beginning September, 1918, brings out the very remarkable variation in the various cities in degree of explosiveness of the epidemic and the total excess death rate for the period.

EXPLOSIVENESS.

Great variation in explosiveness in individual cities was apparent in the 1918 epidemic.

Table III shows the explosiveness of the epi-

Table III.

Index of Explosiveness of Epidemics.

City	1918-19	1920
Albany	285	33
Atlanta	62	28
Baltimore	347	58
Birmingham	112	24
Boston	264	35
Buffalo	197	27
Cambridge	162	35
Chicago	115	63
Cincinnati	85	19
Cleveland	107	49
Columbus	87	84
Dayton	268	54
Fall River	270	28
Indianapolis	74	67
Kansas City	80	84
Los Angeles	86	32
Louisvillle	189	29
Lowell	221	36
Memphis	201	92
Milwaukee	18	64
Minneapolis	33	103
Nashville	416	76
Newark	128	58
New Haven	101	38
New Orleans	305	22
New York	127	57
Oakland	189	27
Omaha	227	38
Philadelphia	451	31
Pittsburgh	168	110
Providence	124	50
Richmond	314	29
Rochester	102	27
St. Louis	29	80
St. Paul	44	49
San Francisco	264	27
Syracuse	202	53
Toledo	132	43
Washington	266	104
Worcester	227	24
All cities considered as a single population group	78	33

Note. The index of explosiveness has been computed for each city as follows: The death rate from influenza and pneumonia (all forms) in the peak week (*i. e.*, week in which the maximum mortality occurred) has been divided by the number of weeks from the beginning of the epidemic up to and including the peak week. It must be remembered that the result is only approximate demic in both the 1918 and 1920 epidemics in forty cities, using as an index the death rate for the peak week divided by the number of weeks from the beginning of the epidemic up to and including the peak week. This gives an arbitrary figure which will serve as an index perhaps quite as well as that secured by more complicated methods.

Chart IX shows the great variation in explosiveness in graphic form. The cities are arranged according to the degree of explosiveness. In the 1918 epidemic eleven cities showed a very high degree of explosiveness (451 to 264) measured by this index *viz.*, Philadelphia, Nashville, Baltimore, Richmond, New Orleans, Albany, Fall River, Dayton, Washington, Boston and San Francisco. Next with high rates (227 to 189) come Worcester, Omaha, Lowell, Syracuse, Memphis, Buffalo, Louisville, and Oakland. Next comes a group with moderate explosiveness (168 to 101), Pittsburgh, Cambridge, Toledo, Newark, New York, Providence, Chicago, Birmingham, Cleveland, Rochester and New Haven.

The last ten cities may be said to have had a low index of explosiveness (87 to 18). These cities were Columbus, Los Angeles, Cincinnati, Kansas City, Indianapolis, Atlanta, St. Paul, Minneapolis, St. Louis and Milwaukee.

Geographically the distribution of the eleven highest cities was wide and included cities in New England, Middle Atlantic, Gulf and Pacific coast cities, with only Nashville and Dayton in the Middle West. The distribution in the next group of cities with high indices including New England, New York State, Oakland, California, and two cities in the Ohio or Mississippi Basin—Louisville and Memphis. The moderate group had Pittsburgh, Cleveland, Toledo and Chicago in the Middle West, Cambridge, New Haven, Providence, Newark, Rochester and New York in the East with Birmingham in the South. The ten cities with a low explosive index were distributed as follows: Los Angeles on the Pacific Coast, Atlanta in the South and Columbus, Cincinnati, Indianapolis and St. Louis in the Middle West with farther north St. Paul, Minneapolis and Milwaukee.

In general the 1920 index of explosiveness did not show such extremes of variation. There were, however, sharp rises above the average for several cities. The index of explosiveness was relatively high in 1920 in Nashville, Memphis, Washington, Pittsburgh, Columbus, Kansas City and Minneapolis. Of these Nashville, Washington and Memphis had a high explosive index in both epidemics. Pittsburgh was moderate in 1918 and high in 1920. Columbus, Kansas City and Minneapolis had a low index in 1918 and a high index in 1920.

What relation did the explosiveness bear to the actual excess death rate for the epidemic period? Of the eleven cities with highest indices for explosiveness, eight were also among the eleven cities with the highest actual excess death rates for the epidemic period. These cities were Philadelphia, Nashville, Baltimore, New Orleans, Albany, Washington, Boston and San Francisco. Thirteen cities had an actual excess death rate for the 1918 epidemic period of 600 or over, ten of these also had a very high explosive index. The three exceptions were Pittsburgh with a moderate explosive index and the highest mortality, Kansas City and New Haven with low explosive index and a very high total mortality.

Ten cities had a low explosive index of less than 100, *viz.*, Columbus, Los Angeles, Cincinnati, Kansas City, Indianapolis, Atlanta, St. Paul, Minneapolis, St. Louis, Milwaukee.

All of these had relatively low excess mortality rates for the epidemic period except Los Angeles and Cincinnati with moderate rates and Kansas City with a very high excess mortality rate.

In spite of the notable exceptions there seems to have been some correlation between the degree of explosiveness and the amount of mortality for the whole epidemic period.

What are the reasons for the great variation in explosiveness shown by the forty large cities?

Pearl[16] in an excellent monograph analyzes geographical position, density of population, differences in distribution of age groups, and great increase or decrease in population in relation to explosiveness. In regard to these factors, which have not been without effect in other diseases, he says:

"The general conclusion to which we come from an examination of the correlation data assembled to this point is that these four general demographic factors,—density of population, geographical position, age distribution of population and rate of recent growth in population have practically nothing to do, either severally or collectively with bringing about those differences between the several cities in respect to explosiveness of the outbreak of epidemic mortality in which we are interested."

Pearl believes that the most significant factor in causing the variation to be the relative normal liability of the inhabitants to die of one of the three great causes of death,—disease of the lungs, heart, or kidneys. He says:

"Such an analysis, by the method of multiple correlation, appears to demonstrate that an important factor so far found in causing the observed wide variation amongst these 39 American cities in respect of the explosiveness of the outbreak of epidemic influenza mortality in the autumn of 1918 was the magnitude of the normal death rates observed in the same communities, particularly those death rates from pulmonary tuberculosis, diseases of the heart and of the kidneys."

Table IV shows the fifteen cities with the highest explosive index in September-October, 1918,—and the combined death rate for pneumonia, tuberculosis, heart disease, and nephritis—eleven of the fifteen cities have a very high combined death rate for these four diseases (average for 1911 to 1917 inclusive). The exceptions are Dayton, Lowell, Syracuse, and Omaha. Dayton, Lowell and Syracuse had average rates for pneumonia and heart disease, but Omaha had low rates for all four diseases.

TABLE IV.

City	Explosive Index	Combined Death Rate per 100,000 Pneumonia, Tuberculosis, Heart Disease and Nephritis
Philadelphia	451	726
Nashville	416	723
Baltimore	347	802
Richmond	314	790
New Orleans	305	919
Albany	285	835
Fall River	270	635
Dayton	268	569
Washington	266	765
Boston	264	684
San Francisco	264	688
Worcester	227	641
Omaha	227	469
Lowell	221	550
Syracuse	202	545

Of the four principal factors in our total mortality pneumonia and heart disease are the ones most likely to affect explosiveness deduced from mortality statistics. If the combined death rate per 100,000 (average for 1911 to 1917 inclusive) for pneumonia and heart disease was more than 350 the explosiveness was marked.

TABLE V.

City	Combined Death Rate per 100,000 Pneumonia and Heart Disease	Explosive Index
Boston	412	264
Worcester	412	227
Pittsburgh	403	168
Baltimore	393	347
New Haven	384	101
New Orleans	381	305
Nashville	380	416
Washington	376	266
Fall River	375	270
Richmond	374	314
Philadelphia	367	451
San Francisco	362	264

The twelve cities with the highest combined rates for pneumonia and heart disease (Table V) showed a very high explosive index in 1918. There are two exceptions,—Pittsburgh and New Haven; of these Pittsburgh had the highest explosive index for the 1920 epidemic, but New Haven showed a low degree of explosiveness in both epidemic periods.

VARIATION IN SEVERITY MEASURED BY EXCESS DEATH RATES.

What are the reasons for the very great variation in the severity of the epidemic as measured by mortality in certain cities? Why did Pittsburgh have a very high rate in all three epidemic periods and why did cities like Milwaukee, St. Paul and Minneapolis have low rates in all periods?

Table VI shows in the first column what may be considered a rough index of the total damage in the forty large cities from influenza and pneumonia combined. The figure given for each city is the sum of the excess death rates for the three epidemic periods from January, 1917, to March, 1920. In the other columns are given the general death rate per 1,000 and the death rate per 100,000 for pneumonia, tuberculosis, heart disease and nephritis.

Considered as a whole there seems to be some correlation between the loss from influenza and the death rates from certain diseases. Considering the cities in three groups this correlation is even more striking.

	Total Excess Death Rate
Group 1	above 800
Group 2	600 to 800
Group 3	below 600

TABLE VI.

City	Total Excess Death Rate per 100,000 for 3 Epidemic Periods, Jan., 1917, to June, 1920.	Gen'l Death Rate per 1,000 Average for 1914 1917, Inclusive	Death Rate per 100,000 Average for 1911 to 1917, Inclusive: Pneumonia	Tuberculosis	Heart Disease	Nephritis
Albany, N. Y.	728	19.4	157.5	254.5	231.3	191.2
Atlanta, Ga.	533	15.7	167.3	148.0	112.6	176.4
Baltimore, Md.	810	18.1	210.3	233.3	182.9	175.3
Birmingham, Ala.	855	16.8	171.0	217.5	115.5	105.2
Boston, Mass.	822	16.4	203.3	173.9	208.5	98.0
Buffalo, N. Y.	722	15.6	158.2	156.6	165.3	118.6
Cambridge, Mass.	659	13.4	155.5	192.8	170.9	76.0
Chicago, Ill.	524	14.4	188.0	162.2	150.4	110.2
Cincinnati, Ohio	650	16.1	142.4	242.5	200.5	157.2
Cleveland, Ohio	740	14.1	139.9	144.1	117.8	92.7
Columbus, Ohio	598	14.9	130.0	116.8	151.4	85.6
Dayton, Ohio	690	14.6	132.7	157.5	176.4	102.3
Fall River, Mass.	673	16.6	219.6	157.4	155.1	103.0
Indianapolis, Ind.	546	15.6	133.9	199.4	177.3	106.3
Kansas City, Mo.	1043	14.9	137.6	163.7	138.6	121.3
Los Angeles, Calif.	559	12.5	90.8	232.4	161.4	104.3
Louisville, Ky.	701	15.7	145.9	198.5	158.0	150.8
Lowell, Mass.	736	16.1	161.4	139.3	156.2	92.7
Memphis, Tenn.	684	20.4	170.7	270.6	136.2	174.4
Milwaukee, Wis.	537	12.2	133.2	100.8	97.9	. 74.1
Minneapolis, Minn. ...	437	11.9	109.8	140.6	107.4	93.6
Nashville, Tenn.	933	17.3	172.4	229.3	207.9	112.9
Newark, N. J.	702	14.2	156.5	178.9	140.3	135.5
New Haven, Conn. ...	765	16.5	210.2	140.9	173.4	130.0
New Orleans, La.	854	20.0	159.2	283.9	220.7	255.1
New York, N. Y.	708	13.9	191.2	190.5	152.8	135.0
Oakland, Calif.	666	11.0	97.8	126.8	189.3	87.5
Omaha, Neb.	743	13.3	155.3	111.2	111.5	90.5
Philadephia, Pa.	1087	16.2	166.2	195.1	191.5	173.0
Pittsburgh, Pa.	1305	16.6	275.1	135.4	127.7	86.8
Providence, R. I.	680	15.2	168.7	158.1	159.1	130.5
Richmond, Va.	608	19.2	179.4	220.9	194.4	195.1
Rochester, N. Y.	534	14.5	135.3	118.0	183.3	133.4
St. Louis, Mo.	629	14.7	158.1	154.8	137.7	167.7
St. Paul, Minn.	510	11.0	92.8	132.6	105.8	80.0
San Francisco, Calif. .	874	15.5	128.3	198.6	234.1	126.6
Syracuse, N. Y.	787	14.6	141.9	114.7	178.5	110.0
Toledo, Ohio	431	16.6	123.3	189.2	158.9	91.7
Washington, D. C.	885	17.6	152.8	221.2	225.3	165.3
Worcester, Mass.	754	16.4	187.5	147.4	224.3	82.3

Group 1:—The cities having the highest excess death rates combined for the three epidemic periods (January, 1917, to March, 1920) also had very high rates of pneumonia, tuberculosis, heart disease and nephritis and a high general death rate. There was one exception—Kansas City.

TABLE VII.

City	General Death Rate per 100,000	Total Excess Death Rate, Influenza Pneumonia for 3 Epidemic Periods—Jan., 1917, to March, 1920	Death Rate per 100,000, 1911 1917, Inc.: Pneumonia	Pneumonia, Tuberculosis, Heart Disease and Nephritis
Pittsburgh	16.6	1305	275.0	625.0
Philadelphia	16.2	1087	166.2	725.8
Kansas City	14.9	1043	137.6	561.2
Nashville	17.3	933	172.4	722.5
Washington	17.6	885	152.8	764.6
San Francisco	15.5	874	128.3	687.6
Birmingham	16.8	855	171.0	609.2
New Orleans	20.0	854	159.2	918.9
Boston	16.4	822	203.3	683.7
Baltimore	18.1	810	210.3	801.8
Average for registration cities		717	158.6	593.6

Table VII shows the rates for these cities compared with the average in all registration cities.

TABLE VIII.

City	General Death Rate per 100,000	Total Excess Death Rate, Influenza Pneumonia for 3 Epidemic Periods—Jan., 1917, to March, 1920	Death Rate per 100,000, 1911 1917, Inc.: Pneumonia	Pneumonia, Tuberculosis, Heart Disease and Nephritis
Syracuse	14.6	787	141.9	545.1
New Haven	16.5	765	210.2	654.5
Worcester	16.4	754	187.5	641.5
Omaha	13.3	743	155.3	468.5
Cleveland	14.1	740	139.9	494.5
Lowell	16.1	736	161.4	549.6
Albany	19.4	728	157.5	834.5
Buffalo	15.6	722	158.2	598.7
New York	13.9	708	191.2	669.5
Newark	14.2	702	156.5	611.2
Louisville	15.7	701	145.9	633.2
Dayton	14.6	690	132.7	568.9
Memphis	20.4	684	170.7	751.9
Providence	15.2	680	168.7	616.4
Fall River	16.6	673	219.6	635.1
Oakland	11.0	666	97.8	501.4
Cambridge	13.4	659	155.5	595.2
Cincinnati	16.1	650	142.4	742.6
St. Louis	14.7	629	158.1	618.3
Richmond	19.2	608	179.4	789.8

Group 2:—Had rather severe visitations of influenza with moderate and in some instances high rates for pneumonia, and pneumonia, tuberculosis, heart disease and nephritis combined.

Group 3:—Had very low rates for influenza with low general death rates and low rates for pneumonia, and pneumonia, tuberculosis, heart disease and nephritis combined. There were some exceptions to this rule. The general death rates in Toledo and Indianapolis are a little higher than in the other cities of the group. Chicago and Atlanta had a pneumonia rate above the average—but all the others were far above the average for pneumonia.

Table IX.

City	General Death Rate per 100,000	Total Excess Death Rate, Influenza Pneumonia for 3 Epidemic Periods Jan., 1917, to March, 1920	Death Rate per 100,000, 1911—1917, Inc. Pneumonia	Death Rate per 100,000, 1911—1917, Inc. Pneumonia, Tuberculosis, Heart Disease and Nephritis
Columbus	14.9	598	130.0	483.8
Los Angeles	12.5	559	90.8	588.9
Indianapolis	15.6	246	133.9	616.9
Milwaukee	12.2	537	133.2	406.0
Rochester	14.5	534	135.3	570.0
Atlanta	15.7	533	167.0	604.0
Chicago	14.4	524	188.0	610.8
St. Paul	11.0	510	132.6	411.0
Toledo	16.6	451	123.3	563.1
Minneapolis	11.9	437	109.8	451.4

Table X shows that ten of the twelve cities with the highest rates for pneumonia and heart disease had also excessively high rates for influenza and pneumonia during the three epidemic periods from January, 1917, to March, 1920. The exceptions were Fall River and Richmond and their rates were not far below the average.

Table X.

City	Pneumonia and Heart Disease	Total Excess Death Rate, 3 Epidemic Periods —Jan., 1917, to June, 1920
Boston	412	822
Worcester	412	754
Pittsburgh	403	1305
Baltimore	393	810
New Haven	384	765
New Orleans	381	854
Nashville	380	933
Washington	376	885
Fall River	375	673
Richmond	374	608
Philadelphia	367	1087
San Francisco	362	874

IMMUNITY.

Does an attack of influenza confer immunity and if so what is its duration?

This question is of the greatest interest and importance to the health officer but unfortunately, as in other phases of the subject of influenza, there is much conflicting testimony.

There has been a tendency to ascribe the relatively low mortality in the age groups over 40 to an immunity conferred by the epidemic beginning 1889-90 and lasting about three decades. Such an immunity would be expected to protect those above the age of 30. As a matter of fact the significant fall in the death rate is not apparent until after 40—the rate between 30 and 40 being almost as high as that from 20 to 30.

If such an immunity was actually conferred from 1889 to 1892 it is inconceivable that it would operate to protect those from ten to twenty years of age at that time and afford no protection to the group from one to ten years of age.

Arnold[17] made a study of persons attacked in Leicester, England, in the three epidemic waves —summer, 1918; autumn, 1918, and early in 1919, the peak week in these waves being the weeks ending July 20, November 2, and March 1. He concluded that considerable immunity to the autumn wave was exhibited by those who had suffered in the midsummer wave but that only slight immunity was evident in the February, March wave.

MacEwen[18] found that the percentage of those attacked in autumn in schools, colleges and among London police was much less among those who had had influenza in the summer wave. For example, of 1224 pupils in Finchley Council schools only 13% of those alleging an attack in the summer had influenza in the autumn, while 35% of those with no record of previous influenza were attacked.

Scoccia[19] states that all of the eighty nurses in the Spezia Hospital were attacked during May and June—late in September the epidemic recurred and not one of these 80 nurses was attacked.

Hamilton and Leonard[20] found that in a girls' school by strict quarantine the first outbreak in November, 1918, was confined to three cottage units. In January the disease returned but it spared those attacked in November.

Vaughan,[21] judging from experience in army camps, states that the mild influenza of April, 1918, gave a marked degree of immunity against the epidemic of September, 1918.

Dr. Henry F. Vaughan, Commissioner of Health, Detroit, Michigan, estimates that in the period September, 1918, through March, 1919, that 125,000 cases occurred in Detroit or that 14% of the population was attacked.

If the 1920 epidemic was unaffected by immunity conferred in 1918-19, then 14% of the cases would probably occur among those previously attacked. Actually only 10% of the 1920 cases gave a history of a previous attack. From this Vaughan concludes that there was an effect in 1920 from the immunizing influence of the epidemic of 1918-19.

Frost found from a canvass in Baltimore of 4078 persons known to have escaped influenza in 1918 and 1059 known to have had influenza in 1918 that there was little difference in the percentage attacked in the two groups—and concludes from this that the 1918 attack did not confer immunity against attack in 1920 and that the immunity following an attack of influenza must be of short duration.

Judging from the results of his surveys in Baltimore, Frost believes that there is a transient immunity of a few months duration at least.

In analyzing the Baltimore epidemic he made a first canvass of 33,776 people between November 20 and December 11, 1918, and a second canvass of the same population in January to determine the extent of the recrudescence reported in December. Among 32,600 people included in this canvass, 724 cases of influenza were found to have occurred since the previous survey. Of this number, 121 cases were reported as second attacks, but on investigation through the attending physicians or by a medical officer, the clinical diagnosis of both attacks as influenza was confirmed in only 26 cases, or 0.37 per cent. of the total, and even in these cases the diagnosis is necessarily uncertain. Considering that 23 per cent. of the population had had influenza prior to December 11, the proportion of second attacks should have been much greater if no immunity had been acquired.

If the prepandemic rises shown on Chart II were due to the same disease as that responsible for the great pandemic rise of September, 1918, then we would expect that the rise in September, 1918, would be modified according to the number of people attacked in April, 1918—and the degree of immunity conferred by such attack.

What effect, if any, did the previous epidemics and especially the epidemic of March-April, 1918, have upon the prevalence of influenza in September-October, 1918? Table XI shows annual excess death rates, influenza and pneumonia, for certain cities for the following periods:

January, 1917, to September, 1918.

September, 1918, to June, 1919.

January to March 1920.

A careful study of this table shows certain striking features but no regularity in the relation between the four periods covered in the matter of prevalence.

1. Certain cities were hard hit in all periods, notably Pittsburgh, Philadelphia, Kansas City and Nashville.

2. Certain cities escaped with low rates in all periods—Minneapolis, St. Paul and Chicago.

3. Certain cities with high rates in the great pandemic had low rates in the other epidemic periods—Boston, Worcester, New Haven, Fall River and New Orleans.

4. Certain cities with low rates in the great pandemic and high rates in one of the other periods—Birmingham, Milwaukee, Columbus, St. Louis and Indianapolis.

The table does not show that the prepandemic waves had any definite or consistent influence on the prevalence in the great pandemic.

We must bear in mind, however, that mortality statistics alone do not accurately indicate prevalence unless we have knowledge of the ratio between cases and deaths also. Thus the prevalence in a mild epidemic might appear low because of a low case fatality rate, yet the reverse might be an actual fact. For this reason it is difficult to estimate the immunizing influence of an epidemic by mortality rates alone. A very mild epidemic with very few deaths might be very potent in immunizing large numbers of the population provided that an attack of the disease produced immunity. We cannot conclude, therefore, that a low mortality rate in April, 1918, necessarily means a low prevalence.

On the other hand, it is natural to conclude that the high mortality rates shown by Birmingham, Pittsburgh, Philadelphia, Nashville and Kansas City had apparently no effect on the pandemic prevalence although Birmingham had a relatively low prevalence in the pandemic of September-October, 1918.

These indications suggest one of two things: either that in the great pandemic we were dealing with a new and entirely different disease, or that the immunity conferred by an attack, if any, was of a very fleeting character,—a matter of less than six months.

Table XI.

Actual Excess Death Rates per 100,000 Influenza and Pneumonia (All Forms) for Each Epidemic Period.

City	Jan., 1917 to Sept., 1918	Sept., 1918 to June, 1919	January to March, 1920
Albany, N. Y.	33	631	64
Atlanta, Ga.	80	330	123
Baltimore, Md.	87	629	94
Birmingham, Ala.	238	497	120
Boston, Mass.	53	685	84
Buffalo, N. Y.	67	567	88
Cambridge, Mass.	62	532	65
Chicago, Ill.	25	404	95
Cincinnati, Ohio	52	531	67
Cleveland, Ohio	107	546	87
Columbus, Ohio	65	409	124
Dayton, Ohio	58	532	100
Fall River, Mass.	40	602	31
Grand Rapids, Mich.	38	—	—
Indianapolis, Ind.	67	354	125
Jersey City, N. J.	70	—	—
Kansas City, Mo.	132	689	222
Los Angeles, Cal.	7	505	47
Louisville, Ky.	113	530	58
Lowell, Mass.	97	548	91
Memphis, Tenn.	75	470	139
Milwaukee, Wis.	98	337	102
Minneapolis, Minn.	47	299	91
Nashville, Tenn.	135	662	136
Newark, N. J.	72	538	92
New Haven, Conn.	45	629	91
New Orleans, La.	35	761	57
New York, N. Y.	60	544	104
Oakland, Cal.	30	528	108
Omaha, Neb.	72	562	109
Philadelphia, Pa.	175	814	97
Pittsburgh, Pa.	238	891	176
Providence, R. I.	58	534	88
Richmond, Va.	40	520	48
Rochester, N. Y.	53	433	48
St. Louis, Mo.	103	406	120
St. Paul, Minn.	37	386	87
San Francisco, Cal.	33	724	117
Syracuse, N. Y.	60	580	147
Toledo, Ohio.	65	329	57
Washington, D. C.	80	689	116
Worcester, Mass.	42	618	94
Average	74.86	544.37	97.72

If an attack of influenza conferred immunity for a period of years we would expect an epidemic in April to modify a later epidemic in September of the same year.

Thus cities which are severely stricken in March-April, 1918, might be expected to escape with relatively low mortality in September-October, 1918.

On Chart X are plotted the excess death rates, influenza and pneumonia, all forms, in the epidemic periods, January, 1917, to September, 1918, and September, 1918, to June, 1919, for the forty large cities. The excess death rates were plotted as "relative figures" or variations from the mean, which is placed as 100 on the chart. The cities are arranged in the order of the severity of their death rate during the first of the two epidemic periods in order to bring out any correlation between the rates in the two epidemics.

The five cities which suffered most severely in the period January, 1917, to September, 1918, were Birmingham, Pittsburgh, Philadelphia, Nashville and Kansas City.

In the epidemic period September, 1918, to June, 1919, Birmingham escaped with a rate below the average—but Pittsburgh and Philadelphia were again hit hardest and Nashville and Kansas City were near the top of the list.

Louisville and Cleveland, too, were above the average for both epidemic periods. St. Louis and Milwaukee were more orthodox, being above the average for the first epidemic period and were well below the average in the second.

Baltimore, Washington and Atlanta were near the average for the first period. In the second period Baltimore suffered severely, Washington more severely, while Atlanta escaped with a low rate.

Many other examples of the contradictory results might be cited. Syracuse and Rochester both had low rates in the first period and Syracuse had an apparently compensatory high rate in the second, while Rochester again escaped with a low rate.

The best examples of cities which appear to give a compensatory high rate in the second period after a low rate in the first are New Orleans, San Francisco, and Boston. Striking examples of low rates in both epidemic periods are furnished by Toledo, Minneapolis, St. Paul, and Chicago.

Chart XI compares in the same manner the two epidemic periods—first, September, 1918, to June, 1919; second, January to March, 1920.

Here again while some cities seem to show the rates for the second epidemic to have been modified by the first, others suggest no such relation. New Orleans, Boston, New Haven, and Fall River, all with high rates in the period beginning September, 1918, have relatively low rates in 1920.

Birmingham, Memphis, St. Louis, Columbus, Indianapolis and Atlanta—with low rates in the first period, had very high rates in the second.

On the other hand, Pittsburgh, Kansas City, San Francisco, Syracuse and Washington were severely stricken in both periods, while Oakland, Los Angeles, Rochester, St. Paul, and Minneapolis had low rates in both periods.

A careful study of Table XI shows many instances in which low and high rates alternate in successive epidemic periods, suggesting that immunity conferred in one epidemic period plays a part in the low rate which follows. Unfortunately for this conclusion quite a number of cities had high rates for all three periods so that charts X and XI do not show any consistent relation between a low rate in one epidemic period and a high rate in another.

It is possible that other reasons independent of immunity or lack of immunity may be found to explain why Pittsburgh, Nashville, Kansas City and Philadelphia had high rates in all periods.

ETIOLOGY.

Two years after the epidemic of '89-90, Pfeiffer,[22] working with purulent bronchitis and broncho-pneumonia, observed and cultivated small gram negative bacilli, which he previously had seen in the sputum of cases during the great epidemic. He demonstrated that these organisms could not be cultivated by the methods used by other workers in the epidemic of 1889 and this fact was held to explain failure to isolate during 1889. Pfeiffer felt justified in attributing the 1889 epidemic to this cause which he named the influenza bacillus.

Pfeiffer claimed that he found influenza bacilli in all fresh uncomplicated cases of influenza. He also claimed that they were found only in cases of influenza, acute or convalescent. He described what he called pseudo-influenza bacilli—larger than influenza bacillus and with a tendency to thread formation, as occurring in broncho-pneumonia complicating diphtheria.

Weichselbaum[23] confirmed Pfeiffer's findings in 1892, and in 1897 Grassberger[24] published similar findings. The French[25] workers did not accept the claims of Pfeiffer.

Many workers have since been unable to demonstrate the existence of pseudo-influenza bacilli as a group. Since Pfeiffer's time and until the recent pandemic the great majority of workers have failed to find the influenza bacilli in cases of influenza in such high percentages as reported by Pfeiffer and have found B. influenzae in those suffering from other diseases and in healthy persons.

IS THE B. INFLUENZAE THE CAUSE OF INFLUENZA?

The experience of workers in the great pandemic and since September, 1918, has resulted in very conflicting reports concerning the etiology of influenza. While Pfeiffer's claims have received some new support, many believe B. influenzae to be only a secondary invader.

Abrahams[26] considers the primary infection to be due to B. influenzae and that pneumococci, streptococci, or diplostreptococci are secondary invaders, producing the fatal result. Rucker and Werner[27] held a similar view. Keegan[28] recovered B. influenzae from 86% of necropsies and considers it the primary cause.

Spooner, Sellards and Wyman,[29] working at Camp Devens, consider that B. influenzae is established as the cause of the epidemic. The Kitasato Institute[30] findings are that the influenza bacillus of Pfeiffer was the cause of the 1918 pandemic.

These writers practically all believe that the initial damage is done by the influenza bacillus which paves the way for secondary invaders.

Lucke, Wight and Kime[31] report frequent finding of B. influenzae and believe that if not the primary cause it is an indication of influenza.

Duval and Harris[32] believe B. influenzae is the cause of influenza and claim to have found specific immune bodies to B. influenzae in the blood of influenza patients during and after infection.

Small and Stangl[33] in the 1920 epidemic in Chicago found B. influenzae in 100% of acute influenza patients. In the pneumonia cases studied they found pneumococci in 84%; hemolytic streptococci in 18.7% and B. influenzae in 75%.

Many observers finding B. influenzae in acute influenza in a very high percentage of cases believe that faulty technique may explain failure to find in all cases. Park evidently holds such a view and Keegan suggests the same explanation of some of the failures to find in high percentages in the early acute stage.

Wade and Manalang[34] report an interesting variation in morphology of the Pfeiffer bacillus:

"It has been found that three different strains of an organism supposed to be Bacillus influenzae will, under certain conditions, abandon the usual bacillary form and grow as a frank fungus, morphologically of the Dicomyces type. Under other conditions they show less modification, the most striking feature then being the production of condiospores, bodies of a type not found in true bacteria. That this organism may not be the true Pfeiffer bacillus is conceivable, of course, but considering the source, morphology, ordinary cultural characteristics, and the poison production of the one strain tested, we consider this highly improbable. Further, we are confident that the cultures do not contain any contaminating organisms, as may be suggested. In short, we believe that we have been dealing solely with the true Pfeiffer bacillus."

It is interesting to note in connection with the results of Wade and Manalang cited above that Pfeiffer described what he called pseudo influenza bacilli with a tendency to thread formation.

Jordan[35] found the Pfeiffer bacillus in 64% of cases examined October, 1918, to February, 1919. The other organism most commonly found was the Mathers streptococcus. He found the pneumococcus in 20%. He states:

"The observation carried out by the aerobic blood-agar plate method and recorded in this paper have not shown the predominance or constant presence of any one organism in the upper respiratory tract of influenza patients. The Pfeiffer bacillus, however, has been more conspicuous than any other organism, particularly in comparison with its relative infrequency in cases of rhinitis and tonsillitis examined during the same epidemic period."

Albert and Kelman[36] find that "the influenza bacillus produces a toxin which is fatal to mice, guinea-pigs and rabbits almost as rapidly as are broth cultures of equal dosage. This toxin is produced very rapidly and can be obtained by filtering broth cultures. It is not possible to state definitely whether it is an endotoxin or an extracellular one.

"Although the symptoms of intoxication as seen in lower animals following injections of the Pfeiffer bacillus are suggestive of the profound intoxication seen in connection with many cases of the epidemic disease influenza in the human being, these experiments do not furnish any proof that the Pfeiffer bacillus has any specific etiologic relationship to that disease. On the other hand, they suggest that a possible etiologic relationship cannot be ignored."

Huntoon and Hannum[37] claim that B. influenzae produces a toxin which produces in animals congestion of the respiratory tract with hemorrhages into the alveoli.

Ferry and Houghton[38] report similar findings in regard to a toxin and claim to have produced an antitoxin which protected guinea pigs.

Roos[39] also reports on the toxin production of B. influenzae and reports similar results to Huntoon and Hannum in the effect of the toxin in predisposing to invasion by secondary organisms.

Another very large group believes that some unknown organism causes the initial damage by breaking down the natural protective barriers and permitting secondary invasion by the pneumococci, streptococci and B. influenzae, which they consider as a secondary invader only.

Park[40] says:

"These results appear to us to throw the influenza bacilli in the cases studied as clearly into the class of secondary invaders.

"We believe that the other microörganisms, such as certain streptococci and pneumococci which are under suspicion in different localities will be found after subjection to similar severe tests not to possess the necessary identity of characteristics to allow them to remain under serious consideration as the primary agent in this epidemic, but rather like the influenza bacillus, to be reckoned among the most important of the secondary invaders.

"Our final conclusion is, therefore, that the microörganism causing this epidemic has not yet been identified."

Howard[41] also believes that the influenza bacillus is a secondary invader only, which may produce a terminal broncho-pneumonia.

Wollstein,[42] working with sera of convalescents from influenza concludes:

"The patients' serological reactions indicate the parasitic nature of the bacillus, but are not sufficiently stable and clean-cut to signify that Pfeiffer's bacillus is the specific inciting agent of epidemic influenza. They do, however, indicate that the bacillus of Pfeiffer is at least a very common secondary invader of influenza, and that its presence influences the course of the pathological process."

Sellards and Sturm[43] report finding an organism with all the characteristics of B. influenzae in a series of measles cases in both sputum and conjunctivae with the disappearance of the organism with subsidence of symptoms in three-fourths of the cases. They consider that presence of B. influenzae in two diseases shows a causal relation to neither.

THE RÔLE OF STREPTOCOCCI, PNEUMOCOCCI AND OTHER ORGANISMS.

There seems to be relative unanimity of opinion as to the rôle played by the pneumococci, streptococci and other organisms commonly found in the upper air passages. Practically all observers consider these as secondary invaders.

Many writers[44] have associated streptococci with the complications of measles and have stressed the likelihood of streptococcus carriers suffering severely from those complications. This is suggestive of what may happen in influenza with both streptococci and pneumococci.

Hall, Stone and Simpson[45] found pneumococci in influenza sputa in 302 cases, 273 of which were Type IV.

Blanton and Irons[46] found streptococci in 451 and Type IV pneumococcus in 148 cases out of a total of 749. Thirty per cent. of the streptococci were hemolytic, 70% non-hemolytic. Opie[47] and his co-workers found pneumococci in 61.2% of those examined. They believe that the fatal factor was a lobar pneumonia, and that the streptococcus hemolyticus played an insignificant part in the production of pneumonia.

In their second report these authors modify their statement in regard to the significance of streptococci:

"The sequence of events that occurs in many cases of influenza is as follows: B. influenzae descends into the bronchi; pneumococci (in this camp usually Type IV) invade the inflamed bronchi; enter the lung, and produce either lobar pneumonia or bronchopneumonia. Hemolytic streptococci may descend and infect the pneumonic lung. It is not improbable that hemolytic streptococci may invade the bronchi previously infected with B. influenzae and cause bronchopneumonia in the absence of pneumococci.

"When hemolytic streptococci invade the lung either with or without preceding pneumococcus infection, there may be no suppuration of the lung. It is probable that death has occurred before there is opportunity for the formation of abscesses. Streptococcus hemolyticus may pass through a pneumonic lung and appear in the heart's blood although there has been no suppuration. It is not improbable that it may pass through the lung and produce empyema, the lung remaining free from actual suppuration. Lobar pneumonia appears to resist suppuration more effectively than bronchopneumonia; but fatal streptococcus infection is common with both.

"Infection with hemolytic streptococci may spread as an epidemic through the pneumonia wards of a hospital. A single patient with streptococcus pneumonia is a source of grave danger to every patient in the same ward. Superimposed infection with hemolytic streptococci increases the mortality of pneumonia so that it may reach from 50 to 100 per cent. of all patients with pneumonia."

Birge and Havens[48] found streptococcus hemolyticus in 60 cases ante mortem and in many post mortem cases of influenza pneumonia.

Goodpasture[49] in the later stage of the epidemic found streptococcus hemolyticus in all of the 16 cases which came to necropsy.

Tunnicliff[50] states that Mathers found a green producing streptococcus in 87% of 110 cases. The same writer declares that specific opsonins develop in the course of influenza, but that with onset of pneumonia these opsonins decrease. The changes in opsonic power are specific for the green producing coccus and no fluctuations being observed for streptococcus hemolyticus, B. influenzae or M. catarrhalis.

Rosenow[51] from immunologic studies believes that there is a pandemic strain of green producing diplostreptococci in influenza. He produced results in guinea pigs similar to the pathologic changes in human lungs in influenza. Rosenow also claims to have found evidence in group reaction between green producing and hemolytic strains of streptococci.

Dochez, Avery and Lancefield[52] claim that immunological differences have been shown to exist between strains of streptococcus hemolyticus of the human type and that four biological types have been identified by means of the reactions of agglutination and protection and that at least two other types have been encountered and the indications are that more exist.

Jordan[53] found the Mathers' coccus about as frequently as B. influenzae and states that its association with pneumonia cases seemed to be closer than that of the Pfeiffer bacillus.

Howell and Anderson[54] in a complement fixation experiment conclude:

"The outstanding feature of this work on complement fixation with influenza serum is the large number of positive results with certain strains of the viridans group of streptococci isolated from cases of influenza at Camp Meade and in Chicago. The evidence indicates that such organisms probably played an important part in the morbid process even in other places. Serum from influenza patients in several different places appears to have acquired similar new properties."

Claims that a filterable virus is the primary cause of influenza have been made by many writers. Nicolle and Lebailly,[55] de la Rivière,[56] da Cunha, Magalhaes, and da Fonseca,[57] and Gibson, Bowman, and Connor[58] have reported transmission of the disease by filtrates, and von Angerer,[59] da Cunha, Magalhaes, and da Fonseca, Leschke,[60] Bradford, Bashford, and Wilson,[61] and Gibson, Bowman, and Connor,[62] claim to have cultivated minute filterable organisms.

Wilson[63] made the following claims:

1. An organism, of definite morphological and cultural characters, has been isolated from cases of influenza.

2. It can be demonstrated in the blood, sputum, and other exudates, and in the tissues, post mortem, by appropriate methods of staining.

3. It belongs to the group of "filter-passers," a group of organisms which pass through bacteriological filters. It has been seen microscopically in the filtrate and has been cultivated therefrom.

4. It has not been found in a large series of controls.

Arkwright[64] took exception to these claims after an attempt to confirm them and as a result Wilson modified the claims by withdrawing the claim that a filter passing organism had been grown in pure culture.

Other workers, notably Rosenau,[65] have failed to transmit the disease by filtrates. Rosenau had 100 young volunteers of the most susceptible age. He used suspensions of Pfeiffer's bacillus, citrated blood of influenza patients, emulsion of sputa unfiltered and filtered mucous secretions. All results were negative.

McCoy had similar results at San Francisco with enlisted men of the Yerba Buena Naval Training Station. These experiments do not definitely rule out a filterable virus and the results are particularly surprising in a disease which in the field of epidemic times appears to be very readily transmissible.

Wahl, White and Lyall[66] failed to transmit the disease to man using the filtrate from a pneumonic lung directly into the subject's nasal passages. They had negative results also with emulsions of B. influenzae.

CONCLUSIONS.

It is probable that influenza is a disease of great antiquity and that the cause of the world-wide pandemics and interpandemic outbreaks is the same.

With a strong predilection for the winter months we have influenza with us every year—and in retrospect we can detect in the mortality statistics outbreaks reaching epidemic proportions in 22 out of the 30 years since 1889.

In 1918-19 the attack rate varied from 15 to 40% and seemed to be highest in the age group five to nine—declining in each successive age group except 25 to 34, which exceeded the rate for the group 15 to 24.

The incidence in 1918-19 was greater in females than males and the disparity was most noticeable in the ages from 25 to 40, indicating, according to Frost, that the females from 15 to 45 were either more susceptible or more intimately exposed to infection than males of corresponding age.

Case fatality in the 1918-19 epidemic was about 2% and was slightly higher in females under 15 and very much higher in females over 60 than in males of corresponding ages. From 15 to 60 the case fatality was much higher in males.

There was great variation in 40 large cities in explosiveness of the epidemic and in the severity as measured by the excess death rates for the entire epidemic period.

There seemed to be some correlation between explosiveness and the severity as measured by excess death rates—the greatest mortality being usually but not always in cities with a high explosive index.

There was little consistency in the explosiveness of the two epidemics, 1918-19 and 1920 upon comparing the indices in the various cities. Cities with a high explosive index in

1918-19 often had a low index in 1920. Most cities with a high explosive index for 1920 had a low index for 1918-19. Memphis, Nashville, and Washington had a high index of explosiveness in both epidemics.

There seemed to be some correlation between explosiveness and the general death rate and the rates for the four principal causes of death —pneumonia, tuberculosis, heart disease and nephritis. There seemed to be considerable correlation between the total excess death rates for the epidemic periods and the general death rate and the death rates for pneumonia, tuberculosis, heart disease and nephritis.

All the evidence points to an immunity of relatively short duration—probably of months rather than years.

The etiologic cause is unknown. There is not sufficient evidence to warrant the view that B. influenzae is anything more than a secondary invader. The claims for a filterable virus are strong but much additional work will be necessary to make certain many things which are now only possibilities.

A survey of the whole field and all available literature convinces me that while further epidemiologic studies will have great value and be of intense interest they will not furnish a solution of the problem. We must have more intensive, comprehensive and sustained laboratory research, using the body fluids and secretions of influenza cases for material if we hope to solve the problem and secure the biologic aids which we now lack for the prophylaxis and treatment of influenza.

REFERENCES.

[1] Hirsch: Handbook of Geographical and Historical Pathology, Vol. i.
[2] Webster, Noah: A Brief History of Epidemic and Pestilential Diseases, Vol. ii, Hartford, 1799.
[3] Nothnagel's Encyclopedia of Practical Medicine.
[4] Frost, W. H.: Jour. A. M. A., Vol. lxxiii, p. 313, Aug. 2, 1919.
[5] Kinsella, R. A.: Jour. A. M. A., Vol. lxxii, p. 717, March 8, 1919.
[6] Soper, George A.: Jour. A. M. A., Vol. lxxi, p. 1907, Dec. 7, 1918.
[7] Winslow, C. E. A., and Rogers, J. F.: Jour. of Infec. Dis., March, 1920.
[8] Brownlee, John: The Lancet, Nov. 8, 1919.
[9] Stallybrass, C. O.: The Lancet, Feb. 14, 1920.
[10] Spear, B. E.: The Lancet, March 13, 1920.
[11] Abbott, S. W.: Report Massachusetts State Board of Health, 1890
[12] Parsons: Local Government Board Report of the Influenza Epidemic, 1889-90.
[13] Winslow, C. E. A., and Rogers, J. F.: Jour. of Infec. Dis., March, 1920.
[14] Frost, W. H.: Statistics of Influenza Morbidity, Pub. Health Reports, March 12, 1920.
[15] Frost, W. H.: Statistics of Influenza Morbidity, Pub. Health Reports, March 12, 1920.
[16] Pearl, Raymond: Influenza Studies, Pub. Health Reports, Aug 8, 1919.
[17] Arnold, M. B.: Forty-eighth Annual Report, Local Gov't Board, 1918-19.
[18] Report of Local Gov't Board, 1918-19
[19] Seccia, V.: Policlinico, Rome, Dec. 22, 1918, Vol. xxv, No 51.
[20] Hamilton, J. H., Leonard, A. H.: Jour. A. M. A., March 22, 1919.
[21] Vaughan, Victor C.: Jour. A. M. A., Sept. 20, 1919, p. 890.
[22] Pfeiffer: Zeitschrift J. H., 13, 357, 1893.
[23] Weichselbaum, A.: Wien. klin. Wchnschr., 32, 459, 1892.
[24] Grassberger, I.: Ztschr. f. Hyg., 25, 453, 1897.
[25] Rosenthal: Arch. d. méd., 1, 1281, 1905.
[26] Abrahams: Jour. A. M. A., Vol. lxxii, p. 454, Feb. 8, 1919.
[27] Rucker and Werner: New York Med. Jour., Dec. 21, 1918, No. 25; Jour. A. M. A., Vol. lxxii, p. 1066, Jan. 18, 1919.
[28] Keegan, S. J.: The Prevailing Pandemic of Influenza, Jour. A. M. A., Vol. lxxi, p. 1051, Sept. 22, 1918.
[29] Spooner, L. H., Sellards, A. W., and Wyman, J. H.: Serum Treatment of Type I Pneumonia, Jour. A. M. A., Vol. lxxi, p. 1310, Oct. 19, 1918.
[30] Editorial, The Etiology of Influenza, Jour. A. M. A., Vol. lxxii, p. 1001, April 5, 1919.
[31] Lucke, B., Wight, F., and Kime, E.: Arch. Int. Med., Chicago, Aug. 15, 1919, 24, No. 2.
[32] Duval, C. W., and Harris, W. H.: Jour. Infec. Dis., Chicago, November, 1919, 25, No. 5.
[33] Small, J. C., and Stangl, F. H.: Jour. A. M. A., April 10, 1920, p. 1004.
[34] Wade, H. W., and Manalang, C.: Jour. Exp. Med., Vol. xxxi, No. 1, Jan. 1, 1920.
[35] Jordan, E. O.: Jour. Infec. Dis., Vol. xxv, No. 1, July, 1919.
[36] Albert, H., and Kelman, S. R.: Jour. Infec. Dis., Vol. xxv, No. 6, December, 1919.
[37] Huntoon, F. M., and Hannum, S.: Jour. of Immunology, Baltimore, July, 1919, Vol. iv, No. 4.
[38] Ferry, N. S., and Houghton: Jour. A. M. A., Sept. 27, 1919.
[39] Roos, C.: Jour. A. M. A., Sept. 27, 1919.
[40] Park, W. H.: Am. Med. Ass'n, Vol. lxxiii, No. 5, Aug. 2, 1919.
[41] Howard, S. E.: Bacteriological Findings in Epidemic Influenza, Bull. Johns Hopkins Hosp., 30, 13, 1919; Jour. A. M. A., 72, 678, March 1, 1919.
[42] Wollstein, Martha: Jour. Exp. Med., Vol. xxx, No. 6, Dec. 1, 1919.
[43] Sellards, A. W., and Sturm, E.: Bull. Johns Hopkins Hosp., Baltimore, November, 1919, 30, No. 345.
[44] Irons, E. E., and Marine, D.: Jour. A. M. A., March 9, 1918; Levy, R. J., and Alexander, H. L.: Jour. A. M. A., June 15, 1918; Cummings, J. C., Spruitt, C. B., and Atem, E. J.: Jour. A. M. A., March 8, 1919.
[45] Hall, J. N., Stone, M. C., and Simpson, J. C.: Jour. A. M. A., Dec. 14, 1918.
[46] Blanton, W. B., and Irons, E. E.: Jour. A. M. A., Dec. 14, 1918.
[47] Opie, E. L., Freeman, A. W., Blake F. G., Small, J. C., Rivers, T. M.: Jour. A. M. A., Jan. 11, 1919, Feb. 22, 1919.
[48] Birge and Havens, Jour. A. M. A., April 12, 1919.
[49] Goodpasture, E. W.: Jour. A. M. A., March 8, 1919.
[50] Tunnicliff, R.: Jour. A. M. A., Nov. 23, 1918.
[51] Rosenow, E. C.: Jour. A. M. A., May 31, 1919.
[52] Dochez, A. R., Avery, O. T., and Lancefield, R. C.: Jour. of Exp. Med., Vol. xxx, No. 3, Sept. 1, 1919.
[53] Jordan, E. O.: Jour. of Infec. Dis., Vol. xxv, No. 1, July, 1919.
[54] Howell, Katherine, and Anderson, Ruth: Jour. of Infec. Dis., Vol. xxv, No. 1, July, 1919.
[55] Nicolle, C., and Lebailly, C.: Compt rend. Acad, 1918, clxvii, 607.
[56] de la Riviere, R. D.: Compt. rend. Acad., 1918, clxvii, 606.
[57] da Cunha, A. Magalhaes, O., and da Fonseca, O.: Brazil Med., 1918, xxxii, 376, referred to in Med. Rec., 1919, xcv, 457.
[58] Gibson, H. G., Bowman, F. B., and Connor, J. I.: Brit. Med. Jour., 1918, ii, 645.
[59] von Angerer: Münch. med. Woch., 1918, ii, 1280, abstracted in Bull. Inst. Pasteur, 1919, xvii, 161.
[60] Leschke, E.: Berl. klin. Woch., 1919, lvi, 11, referred to in Med. Rec., 1919, xcv, 456.
[61] Bradford, J. R., Bashford, E. F., and Wilson, J. A.: Brit. Med. Jour., 1919, i, 127.
[62] Gibson, H. G., Bowman, R. B., and Connor, J. I., Brit. Med. Jour., 1919, ii, 331.
[63] Wilson, J. A.: The Quarterly Jour. of Med., Vol. xii, No. 47, April, 1919.
[64] Arkwright, J. A.: Brit. Med. Jour., Aug. 23, 1919.
[65] Rosenau, M. J.: Jour. A. M. A., Aug. 2, 1919.
[66] Wahl, H. R., White, G. B., and Lyall, H. W.: Jour. Infec. Dis., Chicago, November, 1919, 25, No. 5.

Clinical Department.

PNEUMONIA IN A WOMAN WITH AN HABITUAL HIGH BLOOD PRESSURE.

By M. J. Konikow, M.D., Boston.

During the last influenza epidemic I came across a pneumonia case that presents a peculiar interest to the profession, as it occurred in a female patient of 54, whose habitual systolic blood pressure was during the last two years never less than 225 and at times reached as high as 275.

The following table records the temperature, pulse, respiration, and blood pressure from February 24, 1920, her first day of sickness, to March 21, 1920, my last visit, when she was discharged as recovered from the attack of pneumonia.

Date		Temperature		Pulse		Respiration		Blood Pressure	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	D.	S.
Feb.	24, 1920	100							
"	26, "	101							
"	27, "	104							
"	28, "	104							
"	29, "	103.8	104.2	100	108	35	40	100	160
March	1, "	103.0	104.0	96	104	35	37	90	155
"	2, "	103.3	102.9	96	92	37	28	80* 80†	140* 130†
"	3, "	102.0	100.5	84	88	35	32	80	150
"	4, "	99.6	98.5	80	76	30	32	85	145
"	5, "	98.8	100.5	80	80	32	32	90	170
"	6, "	99.0	100.0	84	80	30	30	90	180
"	7, "	98.2	99.5	80	88	30	26	90	180
"	8, "	98.4	99.2	80	84	26	26	90	195
"	9, "	98.0	99.0	84	94	25	25	90	205
"	10, "	97.8	98.5	82	96	24	22	90	205
"	11, "	98.1	98.3	84	90	23	26	90	195
"	14, "	97.6	98.6	82	84	22	20	105	200
"	17, "	98.2	98.6	82	88	20	20	105	200
"	21, "	98.0	98.2	80	84	20	20	110	230

* A.M. † P.M.

As it is seen from this table, the first blood pressure was taken on February 29, probably on the third day of the pneumonia. To my astonishment, this blood pressure fell from her habitual 250 (S) to 160 (S), and continued to fall until it reached, on March 2, as low as 80/130, when the lysis began and the dullness reached its height. From this date with the gradual fall of the temperature, of the pulse, and of the respiration, the blood pressure began to climb again, the diastolic slowly, the systolic quite rapidly, until it reached, on the twenty-first of March, 100/230, almost to her habitual blood pressure.

The tragi-comical side of this case is the fact that while during the past two years attempts were made by many physicians, myself included, to reduce this extremely high blood pressure, and always with a negative result, influenza-pneumonia, with its toxins, began to lower the blood pressure, until it brought it down to 130. What could not be done in two years, the influenza pneumonia achieved in three days. Do we rejoice at this low blood pressure? Certainly not. We tremble for the patient's life, as this low blood pressure simply signifies the weakening of the heart's muscle, the inability of the heart to take proper care of the blood circulation. And as this blood pressure begins to rise, we welcome the rise as the surest sign of approaching recovery, and when at last it reaches the habitual pre-pneumonia height, we know the patient has recovered.

Moral: Leave the high blood pressure alone, if the cause of it cannot be ascertained and removed. High blood pressure in itself is merely nature's means of self-defence.

Book Reviews.

Vital Statistics. By George Chandler Whipple. New York: John Wiley and Sons, Inc. 1919.

The science of demography, the application of statistical study to human life, will undoubtedly develop and become increasingly important in the future as it becomes necessary to condense and make usable the knowledge which will be gathered by public health officials. The publication of this small volume dealing with "Vital Statistics" comes at an opportune time, when nations have become aware, through the Great War, of the necessity of knowing more accurately the conditions in their own and in other countries. The science of demography includes the study of genealogy, human eugenics, the collection by census of social, political, religious, and educational facts concerning population, registration of vital facts, the application of the statistical method to the study of these facts, biometrics, and statistical pathology. The object of this book is to explain how to collect and interpret data on these subjects. It considers statistical arithmetic methods, and how to express vital facts by figures, how to tabulate them, and how to present them in diagrammatic form. Methods of estimating population, of computing birth-rates, marriage-rates, death-rates, and life-tables, of classifying diseases and analyzing death-rates are explained. A chapter dealing with the problem of correlating relations between series, classes, or groups of data, with a view to determining cause and effect, is particularly significant in public health work. In order to make the subject matter more convenient for school instruction, exercises and questions are given at the end of every chapter to incite further study. In the training of future health officers to use vital statistics with unquestionable ability, this book will be found extremely valuable.

Skin and Venereal Diseases. The Practical Medicine Series. Volume VII. Edited by Oliver S. Ormsby, M.D., and James Herbert Mitchell, M.D. Chicago: The Year Book Publishers. 1918.

The purpose of the Practical Medicine Series is to review in a series of eight volumes, issued at monthly intervals, the entire field of medicine and surgery for the year preceding its publication. Although this series is published primarily for the general practitioner, it is so arranged that persons interested in special subjects can obtain in single volumes information on those subjects. Volume VII deals with *Skin and Venereal Diseases.* It contains a statistical report of the American Dermatological Association for the years 1912-1916 and reports of recent research work, such as investigation of the nature and formation of pigment, skin ferments, the causes and treatment of eczema, and treatment of dermatitis venenata by vegetable toxins. Diseases of the scalp and nails, tropical dermatoses, dermatoses due to external irritants, and infectious dermatoses are considered from the point of view of both diagnosis and treatment. In the part of the book devoted to venereal diseases, methods of controlling venereal disease in the army are explained, and the characteristics of gonorrhea, syphilis, chancroid, bubo, and other diseases of venereal origin are considered. The teaching of syphilis is an important problem at the present time, and this volume contains valuable suggestions for organizing syphilis departments and equipping clinics. This volume of the series will be as helpful to the profession as its predecessors.

Nervous and Mental Diseases. The Practical Medicine Series, Volume VIII. Chicago: The Year Book. 1919.

The Practical Medicine Series aims to cover the whole field of medicine and surgery for the year preceding its publication. It is so arranged that, although designed primarily for the general practitioner, persons interested in special subjects may obtain in separate volumes the works which to them are of particular interest.

Volume VIII reviews the subject of *Nervous and Mental Diseases.* The war has to a great extent determined the general course of work carried on in neurology and psychiatry during the past year, and from this source, abundant material of unusual and permanent value has been obtained: problems arising from neuroses and psychoses of war and wounds of all parts of the nervous system are considered. This book describes, also, diseases which have been prevalent during the year in epidemic form, one of the most interesting of which has been the "lethargic" encephalitis occurring in Europe and Australia. Among the monographs not connected with the war or epidemic conditions, perhaps the most important is Cushing's article on "Tumors of the Acoustic Nerve."

This volume, like the preceding publications of this series, presents in concise form the most recent information relating to the subjects with which it is concerned.

United States Army X-ray Manual. New York: Paul B. Hoeber. 1918.

The need for a large number of roentgenologists for service in military hospitals has made it necessary to train for this work many physicians who have had little or no practice in this field. To facilitate the rapid training of these men, this textbook, *United States Army X-ray Manual,* has been prepared under the direction of the Surgeon General. Although this book is not a complete treatise, it covers practically all phases of roentgenology, with particular emphasis on x-ray diagnosis. The purpose of this book is to familiarize the roentgenologist with the apparatus with which he must work under war conditions, and to give him further training in those parts of the work in which he is deficient. As the roentgenologist in the forward hospital is concerned for the most part with localization of foreign bodies, the part of the book devoted to localization is of particular value. The new apparatus designed for use in war service is described in detail, with consideration of its limitations and advantages. The two hundred and nineteen illustrations which are included in this volume are unusually instructive.

The Eye, Ear, Nose, and Throat. The Practical Medicine Series, Volume III. Edited by Casey A. Wood, C.M., M.D., D.C.S.; Albert H. Andrews, M.D.; George E. Shambough, M.D. Chicago: The Year Book Publishers. 1918.

This book is the third of a series of eight volumes of the The Practical Medicine Series, issued for the purpose of summarizing the year's progress in medicine and surgery. This volume is divided into three parts, dealing with the eye, ear, nose, and throat, and contains extracts from the most important contributions to literature on these subjects. Chapters dealing with military surgery of the eye and military otology are of particular value at the present time. Although the book is comprised of information gathered from many sources, it is written concisely and in compact form, and offers to the general practitioner and student a complete review of the subjects with which it is concerned.

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RENEWAL OF NARCOTIC DRUG REGISTRATION.

Forms for the renewal of registration under the Harrison narcotic law are being distributed from the Internal Revenue office to dealers, practitioners, and druggists, for the period of one year, commencing July 1. In order to comply with the provisions of the law these forms should be executed and returned to the Internal Revenue office on or before July 1 with payment of the tax.

In sending out these forms it is necessary that persons registering in one of the first four classes must also register in Class 5 in order to dispense or deal in exempt preparations and remedies, although the payment of an additional tax is not required. A separate return must be filed, however, for each class to which a person belongs.

Persons registered in either class 1 or 2 are not required to file an annual inventory as the monthly returns which they submit show the quantity of narcotic drugs on hand at the end of each month. Those registered in classes 3 and 4, and class 5 (manufacturers only), must prepare an annual inventory of all narcotic drugs and preparations on hand (excluding exempt preparations and remedies), one copy of which is to be submitted to the Internal Revenue office.

USE OF ARSENIC PREPARATIONS IN THE TREATMENT OF SYPHILIS.

On account of the extensive exploitation through advertisements in professional journals and otherwise of various arsenic preparations which are not related to the arsphenamine group, the United States Public Health Service has issued for the benefit of physicians a warning advising against the indiscriminate use of untried preparations in the treatment of syphilis. Attention is invited to the fact that provision has been made for the experimental use of any preparation under conditions which will make the results of such experiments available to others than the physician immediately concerned.

It is the opinion of the Bureau of Public Health Service that in the interest of all concerned, the subcutaneous, intramuscular or intravenous use of arsenic in the treatment of syphilis should be confined to preparations of the arsphenamine group, as these agents are of established value and are produced under the regulations of the Public Health Service. The following firms are now licensed for the manufacture of arsphenamine and neo-arsphenamine: Dermatological Research Laboratories, Philadelphia; H. A. Metz Laboratories, New York City; Diarsenol Co., Inc., Buffalo, New York; Takamine Laboratories, Clifton, New Jersey. The Lowy Laboratory, Newark, New Jersey, has been granted a license to prepare a stable solution of arsphenamine.

It is not the desire of the Bureau to limit clinicians in the choice of agents of recognized worth but in the case of arsenic preparations, not members of the arsphenamine group, the available evidence indicates that their routine use is inadvisable in the treatment of syphilis. If it is desired to use any of these preparations in a purely experimental way, previous authority from the Bureau should be secured. Applications for this authority should be accompanied by a statement as to the composition of the drug including the structural formula and the reason for its use. All information available on the value of the preparation should be forwarded.

ANNUAL MEETING OF THE MASSACHUSETTS MEDICAL SOCIETY.

The one hundred and thirty-ninth annual meeting of the Massachusetts Medical Society was held in Boston on June 8 and 9, at the Boston Medical Library, with an attendance of five hundred medical men and women. Clinics were held during the morning of June 9, there were Medical Sections in the afternoon, and the Shattuck Lecture, "Influenza," delivered by Dr. Allan J. McLaughlin, was largely attended in the evening. Dr. McLaughlin's address will be published in a later issue of the Journal.

On the morning of June 9 the regular annual meeting of the Society was held, preceded by a meeting of the Council and followed by the "Annual Discourse," by Dr. Hugh Cabot. Dr. Cabot's lecture, "Health Insurance, State Medicine, or What?" was published in the issue of the Journal for June 10. The regular proceedings of the Sections and of the Society will be published, as usual, in subsequent issues of the Journal. The afternoon was devoted to regular Section meetings. On the evening of June 9 the annual dinner was held at the American House, followed by a play, "It's a Great Life if You Don't Weaken," given by members of the Norfolk District Medical Society.

The officers of the preceding year were reelected, with Dr. Frederick E. Jones as the new vice-president.

MEDICAL NOTES.

Officers of the Association of American Physicians.—At the annual meeting of the Association of American Physicians held in Atlantic City, the following officers were elected for the ensuing year: President, Dr. William S. Thayer, Baltimore; Vice-President, Dr. Herbert C. Moffitt, San Francisco; Secretary, Dr. Thomas McCrae, Philadelphia; Recorder, Dr. Thomas R. Boggs, Baltimore; and Treasurer, Dr. Joseph A. Capps, Chicago.

Award of British Honor to Major General William C. Gorgas.—A knight commandership of the Order of St. Michael and St. George has been conferred by King George on Major General William C. Gorgas, former surgeon General of the United States Army.

Drug Price Changes.—An announcement made on June 9 stated that prices in pharmaceutical drugs have reached their height and may be expected to become lower in a short time, although it may be many months before many important commodities go back to prewar averages. During the latter half of May and the first half of June there has been considerable cutting in retail prices, chiefly among second, third, or fourth-hand dealers. With a few exceptions such as alcohol, ether, glycerine, acetanilid, acetphenetiden, oxylates, caffeine, phenolphthalein, santonine, saccharine, and a number of the essential oil products, the general tendency of the market has been downward. It is believed by many that Teutonic competition will begin to figure more prominently during the summer months and that by fall a number of leading commodities will be affected by it.

Sanatorium for Tuberculous Soldiers.—The tuberculosis sanatorium heretofore operated by the army authorities at Fort Bayard, New Mexico, has just been transferred to the U. S. Public Health Service, and will soon be available for treating discharged, disabled soldiers. This sanatorium will provide the Public Health Service with 1,000 additional beds to care for its tuberculous patients. The present sanatorium at Deming will be held in reserve, especially for winter use.

At the Fort Bayard Sanatorium the Public Health Service will treat only ambulatory cases of tuberculosis, in which the prognosis is favorable. Patients will be admitted only after careful observation elsewhere to make sure that their condition is suitable for successful treatment at the high altitude of this sanatorium. In general, it is the policy of the Public Health Service not to move patients far from their homes, for experience has shown that such removal often has an unfavorable effect. For this reason patients for the new sanatorium will probably be drawn principally from the middle and south-west sections of the country.

Canadian Medical Association.—The fifty-first annual meeting of the Canadian Medical Association was held at Vancouver, British Columbia, on June 22, 23, 24 and 25, 1920. The presidential address was delivered by R. E. McKechnie, M.D., C.M., F.A.C.S., Chancellor of the University of British Columbia, Vancouver, B. C. Sections were held in Medicine, Surgery, Gynecology and Obstetrics, Ophthalmology and Otolaryngology, Orthopedics, X-ray, Genito-urinary Diseases, Child Welfare and Public Health. Among the addresses were included the following: In Medicine, "Certain Fundamental Errors in the Diagnosis and Treatment of Myocardial Insufficiency," by Charles Lyman Greene, M.D., St. Paul, Minnesota; in Surgery, "The Surgical Treatment of Ulcerated Intestinal Tuberculosis as Occurring Chiefly in the Course of Pulmonary Tuberculosis," by Edward W. Archibald, M.D., Montreal, Quebec; in Orthopedics, "Development and Scope of Orthopedic Surgery," by V. P. Gibney, M.D., Ottawa, Ontario; in Public Health, "The Federal Government and Public Health," by John Amyot, M.D., Ottawa, Ontario. The program of the Section of Medicine included a symposium on "Goitre" on June 23 and one on "Stomach and Duodenum," on June 25. The Surgical Section held a symposium on "Pulmonary Abscess" on June 23.

Also, there were meetings of the Canadian Public Health Association, The Canadian Association for the Prevention of Tuberculosis, The National Committee for Combating Venereal Diseases, and The Canadian Committee on Mental Hygiene. The British Columbia Hospital Association Convention was held in Vancouver at the same time as the meeting of the Canadian Medical Association.

Spread of Bubonic Plague.—The bubonic plague has spread from Vera Cruz to Tampico, Mexico. Aid in fighting the disease has been asked of the Government of the United States and of the American Red Cross, and vaccine and other medical supplies have arrived already at Vera Cruz from this country. Of the twenty-four cases of bubonic plague reported, twenty-three have proved fatal. The Mexican federal authorities have stopped traffic with the interior by destroying railway tracks for five miles on all lines leading out of the city of Vera Cruz.

A report has been received from Pensacola, Florida, of a death from bubonic plague in that city, and public health officials have undertaken an investigation to check the spread of the disease there. Efforts will be made to exterminate rats, and special precautions will be taken so that no ships dock at Pensacola without proper rat guards.

BOSTON AND MASSACHUSETTS.

Massachusetts Society for Mental Hygiene.—The Massachusetts Society for Mental Hygiene was organized and incorporated in 1913 and began its public service in 1914 under the presidency of the late Judge Harvey H. Baker. During the five years of its existence the Society has endeavored to prevent mental disease and defect by educating the community in the principles of mental health, by fostering the mental health of normal children, by protecting the adolescent from mental and nervous breakdown, by the intelligent treatment of the feeble-minded, by improving the standards of care for those suffering from or in danger of developing mental disorder, promoting the study of mental disease and defect in their various forms and in their social and economic relations, and by disseminating knowledge concerning their causes, treatment, and prevention.

Since the organization of the Massachusetts Society for Mental Hygiene the number of persons who have learned to understand the problems of the mentally disordered and defective has been greatly increased, with a consequent increasing demand for adequate care and treatment for these members of society. The distribution of 177,546 publications during the last few years has assisted substantially in the dissemination of important information concerning mental health and diseases. Public conferences and exhibits have been held for the discussion and illustration of facts relating to mental health, individual efficiency, war neuroses, the extent, nature, causes, and means of prevention of mental disease, and the modern methods of care and treatment. During the war the Massachusetts Society, as a coöperative unit of The Medical Committee for Mental Hygiene, shared in examining recruited officers and men for the detection of nervous and mental disorders.

One of the most important branches of service of the Massachusetts Society for Mental Hygiene is its lecture service. During the war this was interrupted; but up to that time two hundred and thirteen lectures had been given by physicians and social workers throughout the State under the auspices of the Society. This lecture service has been resumed and at present covers many phases of mental hygiene. Through the Society, speakers are provided without cost, except for necessary travelling expenses. Arrangements for lecturers should be made through the Medical Director of the Society, Dr. A. Warren Stearns, 1132 Kimball Building, 18 Tremont Street, Boston.

In a report published this year by the Massachusetts Society for Mental Hygiene have been outlined the following needs of mental hygiene in Massachusetts at the present time: to create and maintain an enlightened public opinion concerning the relations of mental normality and abnormality to a useful life in the community; to maintain the highest standard in our state institutions; to foster research and investigation tending to increase the knowledge of this subject and in that way ultimately to reduce burdens; to extend the investigations now being made in a few centers on the relation between mental disease, personality, and crime; to take an advanced stand concerning the prevention of feeble-mindedness; to extend special classes now so successful in a few places; to formulate and to carry out organized effort for the care of the handicapped in the community through social service; to promote the establishment of courses on mental hygiene in the professional and normal schools; to emphasize the need of mental hygiene in the industries.

Bequests to Medical Institutions.—The will of the late Mr. Daniel F. Chase of Quincy provided for the gift of two thousand dollars each to the Boston Floating Hospital, Sharon Sanatorium, and the Quincy City Hospital.

The Goddard Hospital.—The Goddard Hospital in Brockton was established in 1902 by the late Dr. Henry E. Goddard, primarily for the care and treatment of obstetrical cases, but later for both surgical and obstetrical cases. During the eighteen years of its existence the hospital has grown rapidly, expanding from its original headquarters with one room in a private dwelling to the present new hospital with a capacity of thirty-six beds. All the rooms are private or semi-private, there being no open wards. In July, 1919, the hospital was incorporated under the Massachusetts laws, and Dr. Samuel W. Goddard was elected president of the institution. The hospital is conducted on the Mayo plan with a limited closed staff, each member of which is following a special line of work.

The annual report for 1919 states that 752 cases were admitted to the Goddard Hospital during the year; this figure represents the largest increase made in any year. As it has been impossible for the hospital to care for all the patients who have desired to enter, during the last six months a waiting list has been established. When the new hospital building was opened it was intended to institute a medical service, but the heavy demands on the surgical and obstetrical departments have made this impossible and only an occasional case of this type has been admitted. The medical work is designed to secure the most efficient treatment for patients entering the surgical and obstetrical departments, having in view the following objects: (1) to safeguard poor operative risks; (2) to assist in diagnosis; (3) to aid in the treatment of post-operative and post-partum complications.

The Obstetrical Department has established a pre- and post-natal clinic, which is held three forenoons a week for the benefit of prospective mothers and for mothers and babies after delivery. Statistics have shown that by this means any serious complications and severe emergency operations and post partum difficulties are prevented.

The Surgical Department reports the greatest gain in any year. In all, 572 operations were performed and 460 patients were treated, an increase of 117 cases over the previous year. This represents a gain of 34 per cent. Of this number 212 cases were for abdominal conditions. Of the more important abdominal work, 98 operations were for appendicitis, 18 for gall bladder disease, 16 for stomach and intestinal lesions, 57 for hernia, and 82 for gynecological diseases. There were five deaths, a mortality of 1.2 per cent.

The X-ray Department, which was closed during the war, has been reopened under the supervision of Dr. Frank E. Wheatley of Boston, who has been appointed roentgenologist of the staff. With the addition of new equipment, the hospital is now able to make any kind of roentgenological examination and to demonstrate x-ray therapy. The Pathological Department has appointed to the staff Dr. F. B. Mallory, and all pathological specimens are to be examined at his laboratory in Boston and the reports incorporated into the hospital records.

During the past year there were admitted to the hospital 752 cases: 460 surgical, 279 obstetrical and 13 medical, an increase of 116, or 18.2 per cent., over the previous year. There were nine deaths in all, five surgical, one obstetrical, and three medical. The total death rate was 1.2 per cent; surgical, 1.08 per cent.; obstetrical, 0.3 per cent.; medical, 23 per cent. The report contains a complete analysis of the work of all departments of the hospital.

The Training School for Nurses of the Goddard Hospital offers a course of two and one-half years of instruction and training. The school is affiliated with the Providence City Hospital, where a three months' course of instruction is given in the care of patients with infectious diseases and in pediatrics. Three nurses were graduated in 1919.

Week's Death Rate in Boston.—During the week ending June 12, 1920, the number of deaths reported was 199 against 169 last year, with a rate of 12.84 against 11.07 last year. There were 41 deaths under one year of age against 22 last year.

The number of cases of principal reportable diseases were: Diphtheria, 29; scarlet fever, 32; measles, 189; whooping cough, 47; typhoid fever, 1; tuberculosis, 66.

Included in the above were the following cases of non-residents: Diphtheria, 10; scarlet fever, 3; measles, 1; whooping cough, 4; tuberculosis, 4.

Total deaths from these diseases were: Diphtheria, 1; whooping cough, 4; tuberculosis, 14.

Included in the above were the following non-residents: Whooping cough, 1; tuberculosis, 2.

Influenza cases, 2.

Election of Dr. Reid Hunt.—Dr. Reid Hunt, of Harvard University, has been elected president of the United States Pharmacopeial Convention. Dr. Hunt succeeds Dr. Harvey W. Wiley.

Appointment of Dr. Stanley H. Osborne.—An appointment as director of the Division of Preventable Diseases in the Connecticut State Department of Health has been accepted by Dr. Stanley H. Osborne, formerly epidemiologist of the Massachusetts State Department of Health.

Massachusetts State Nurses' Association.—The seventeenth annual meeting of the Massachusetts State Nurses' Association was held on June 7 and 8 at the Walker Building, Boston University College of Business Administration. Over eight hundred nurses, from every part of the state, attended the meeting. On the afternoon of June 8 the opening session was held by the Private Duty Nurses' League; this was followed by a meeting of the state and local Red Cross committees and the Industrial Nurses' conference. At the general meeting in the evening, Mrs. Robert L. DeNormandie spoke on "The Importance of Public Health Nursing from the Viewpoint of a Lay Woman." An address was delivered by Miss Bernice W. Billings, New England director of the Red Cross Nursing Service, and a symposium was held on the life, nursing, training school, and vision of Florence Nightingale.

Report of Baby Hygiene Association.—The annual report of the Baby Hygiene Association states that 109,732 visits were made by nurses to homes during the year 1919. In 13,839 cases, special attention was given to the dieting of children of pre-school age. During the past year, at the request of the Federal health authorities, a careful study has been made of the feeding possibilities of powdered milk, and the results of tests are soon to be announced. The sum of $68,038.08 was expended during the past year in carrying on the work of the Baby Hygiene Association; this sum was raised by voluntary subscription. During this year the association plans to extend greatly its preventive work. Dr. Fritz B. Talbot is president of the association, Dr. Richard M. Smith is at the head of the medical advisory committee, and Winifred Rand, R.N., is in charge of the executive work of carrying on the work of the twenty Boston stations.

The Massachusetts Medical Society.

PROCEEDINGS OF THE SOCIETY.

First Day, June 8, 1920.

There were clinics and operations at the chief hospitals of Boston during the morning, operations and demonstrations being advertised to be given at the Massachusetts Homeopathic Hospital for the first time in the history of the Society. All of the exercises of the anniversary were held at the Boston Medical Library where Fellows had an opportunity to inspect the original charter of 1781, the seal of 1783, the first record book and other early possessions besides recent volumes published by members of the Society. The exercises began with the annual meeting of the Supervisors in John Ware Hall at 11.30 A.M., followed by the meeting of the Council at noon, 130 councilors being present. The meetings of the Sections of Medicine, Surgery and Tuberculosis were held during the afternoon in the various halls of the building according to a detailed and corrected program published in the official organ of the Society, the Boston Medical and Surgical Journal of June 3, 1920, Vol. clxxxii, pages 591-594.

The attendance and the officers elected by the five Sections for the ensuing year were as follows:

Section of Medicine: Attendance 115. *Chairman,* Herman T. Baldwin, Chestnut Hill; *Secretary,* Francis M. Rackemann, Boston.

Section of Surgery: Attendance, 135. *Chairman,* Joshua C. Hubbard, Boston; *Secretary,* George A. Leland, Jr., Roxbury.

Section of Tuberculosis: Attendance, 50. *Chairman,* E. O. Otis, Boston; *Secretary,* Sumner H. Remich, New Bedford.

Section of Hospital Administration: Attendance, 90. *Chairman,* Joseph B. Howland, Boston; *Secretary,* Nathaniel W. Faxon, Stoughton.

Section of Diseases of Children: Attendance, 180. *Chairman,* Maynard Ladd, Boston; *Secretary,* J. Herbert Young, Newton.

The Shattuck Lecture was delivered in John Ware Hall in the evening to an audience of about 200 by Dr. Allan J. McLaughlin, Assistant Surgeon General, United States Public Health Service, Washington, D. C.

Following the lecture light refreshments were served in the supper room.

Second Day, June 9, 1920.

The Society met at the Boston Medical Library for the exercises of the one hundred and thirty-ninth anniversary. The President, Dr. Alfred Worcester was in the chair, and one hundred and twenty-five persons were present during the morning. The reading of the minutes of the last meeting was dispensed with by vote and the minutes were adopted as published.

The Secretary stated that during the year there had been recorded 57 deaths, 35 resignations, 13 deprivations of fellowship for nonpayment of dues, and one expulsion, making a total loss for the year of 106. During this time the Council had restored 12 deprived Fellows, the Censors had readmitted five resigned Fellows and had admitted 221 new Fellows, making a gain of 238, and a net gain of 132. This number added to the membership of the Society on June 4, 1919, made the membership on June 9, 1920, 3,822, the largest in the history of the organization.

The President introduced Dr. C. W. Bartlett of Bennington, Vermont, and Dr. S. B. Overlock of Pomfret, Connecticut, recent presidents of their respective state medical societies, and they extended greetings from the Vermont State Medical Society and the Connecticut State Medical Society.

The draft of the Revised By-Laws and Code of Ethics which had been presented to the Council February 4, 1920, by the committee on revision, and had been amended and approved at that time, was brought before the Society by the President. A copy had been sent to every Fellow with the official program. When asked by the Chairman if there were any criticisms of the By-Laws or Code of Ethics, as sent out, there was no answer. On motion from the floor, duly seconded—there being forty present at the time—it was voted unanimously, That the By-Laws and Code of Ethics as revised and approved by the Council, February 4, 1920, be adopted; also Voted, That all By-Laws and the Code of Ethics heretofore in force, be and they are repealed hereby.

There being no incidental business the papers were read according to the program. At 12 o'clock noon the Annual Discourse was delivered by Dr. Hugh Cabot, Professor of Surgery at the University of Michigan. Subject: Compulsory Health Insurance, State Medicine or

What?" The thanks of the Society were given to the orator by vote.

In the afternoon the Sections of Hospital Administration and Diseases of Children held their meetings according to the programs.

The annual dinner was served at the American House, Boston, to 330 Fellows and guests at 6.30 o'clock P.M. The Rev. Francis E. Webster of Waltham asked the blessing. Governor Calvin Coolidge of Massachusetts made an acceptable address and Dr. Hugh Cabot described the working of the State University in Michigan and suggested that in states such as Massachusetts, where there is no state university, it might be possible to work out a system of community medical service under the auspices of the state medical society. At nine o'clock a play in six scenes was given by the entertainment committee of the Norfolk District Medical Society entitled, "Breaking into the Army or It's a Great Life if You Don't Weaken."

Adjourned at 10.15 P.M.

WALTER L. BURRAGE,
Secretary.

ADMISSIONS REPORTED FROM JUNE 4, 1919, TO JUNE 9, 1920.

Year of Admission.	Name.	Residence.	Medical College.
1919	Adams, Winthrop	Cambridge	12
1920	Alden, Carmi Rupert	Boston	12
1920	Ames, Forrest Bertram	Dorchester	11
1919	Angier, Harlan Wesley	Gilbertville	12
1919	Ash, Richard Maurice	Quincy	12
1919	Ashmore, Buell Leslie	Monson	39
1920	Atkinson, Frederick Charles	North Andover	12
1919	Atkinson, Gordon Douglas	Melrose Highlands	22
1919	Aub, Joseph Charles	Boston	11
1920	Babcock, Harold Lester	Boston	10
1920	Bachman, George Warren	Boston	11
1919	Banquer, Jacob Ellis	Mattapan	12
1919	Barnard, Frederick Joseph	Worcester	12
1920	Belding, David Lawrence	Hingham	10-11
1920	Belisle, Eugene Simeon	Worcester	15
1920	Boch, Joseph	Springfield	11
1919	Bock, Arlie Vernon	Boston	11
1920	Bogan, Isabel Katherine	Beverly	33
1920	Boland, John Joseph	Pittsfield	22
1919	Brackett, Nathaniel Parker	Worcester	12
1920	Breed, William Bradley	Boston	11
1919	Bridgwood, David	Brockton	12
1920	Briggs, Maurice Taggart	Lynn	11
1919	Brown, Josiah Henry	West Newton	20
1919	Brunick, Patrick Vincent	South Boston	12
1920	Bunker, Harry Alden, Jr.	Medfield	11
1920	Burnett, Joseph Hamilton	East Boston	11
1920	Burton, Oscar Augustus	Wellesley	45
1920	Canedy, Frederick Snow	Wellfleet	10
1920	Carey, Joseph Henry	Dorchester	12
1920	Chambers, Ralph Miller	Westborough	16
1920	Chapman, Willian Harden	Hingham	10
1919	*Churchill, Frank Spooner	Milton	11
1919	Clifford, Randall	Boston	11
1920	Cline, Samuel	Boston	11
1919	Clute, Howard Merrill	Boston	14
1919	Cobb, Stanley	Boston	11
1919	Colgate, Charles Henry, Jr.	Rockland	10
1920	Crawford, Joseph Warrington	North Adams	21
1919	Crimmin, Leo Philip	Brockton	12
1919	Cunha, Manuel Felix	Lowell	12
1919	Curran, Louis Frederic	Boston	12
1920	Dalrymple, Sidney Collingwood	Newton	5
1920	Davidson, William Brown	Rutland	32-7
1920	Dayton, Neil Avon	Westborough	31
1919	Deitch, John	Roxbury	12
1919	Derby, Joseph Patrick	Worcester	11
1920	Dodge, Percy Loraine	Needham	12
1920	Durrie, Anna Belle	Melrose	13
1919	Duvally, Nicholas	Boston	12
1920	Fallon, Joseph David	Northampton	7
1919	Fessenden, Charles Hill	Newton Center	10
1920	Finch, Edward Bronson	Greenfield	17
1919	Finkelstein, Isadore Albert	Dorchester	12
1919	Fipphen, Clarence Wyman	Worcester	11
1920	Fisher, Edgar Alexander	Worcester	10
1919	Fisher, John Charles Vincent	Dorchester	10
1920	Fleury, Oswald Theodore	Boston	12
1919	Foley, John Arthur	Boston	11
1919	Forsley, Thomas, Jr.	Lowell	12
1919	Freligh, Claude Adelbert	Palmer	22
1920	Friedman, Harry Falk	Boston	33
1920	Frost, Harold Maurice	Boston	11
1919	Fryburg, Charles August	Worcester	12
1920	*Gaffney, Mary Evangeline	Rutland	12
1919	Gallupe, Harold Quimby	Boston	11
1920	Ganley, Edward Henry	Methuen	12
1919	Garfield, Walter Thompson	Cambridge	11
1920	Garland, Joseph	Boston	11
1919	Gerrard, Clarence Charles	Springfield	22
1919	Gillespie, Norman Wilkinson	Dorchester	11
1920	Gilman, William Henry	Cambridge	12
1919	Gleason, Benjamin Whitney	Athol	19
1919	Godvin, Bernard Aloysius	Jamaica Plain	4
1919	Goethals, Thomas Rodman	Boston	11
1919	Goldman, Harry	Roxbury	12
1920	Goodwin, Harold Merle	Boston	11
1919	Gordon, John Hurter	Boston	12
1919	Grandison, Louis Julian	Somerville	12
1919	Grant, Justin Frank	Boston	6
1919	Green, Hyman	Boston	11
1919	Gustafson, Paul	Boston	11
1920	Haggart, Gilbert Edmund	Boston	11
1919	*Hamilton, Frank Andrew	Boston	11
1920	Hammond, John Wilkes, Jr.	Cambridge	11
1919	Hanlon, Morgan Patrick	Cambridge	12
1920	Harding, Edward	Boston	11
1920	Hardy, Wilbert Clark	Haverhill	12
1920	Harriman, Frank Edwin	Worcester	12
1919	Harris, Francis Sterling	Cambridge	11
1919	Harris, Walter Callahan	Worcester	12
1919	Harvey, Clifford Dawes	Brookline	21
1919	Hatt, Rafe Nelson	Newton	12
1919	Heffernan, Roy Joseph	Dorchester	12
1919	Herlihy, David Joseph	Cambridge	12
1919	Holmes, James	Springfield	32
1919	Hooper, George Henry	Boston	12
1920	Hopkins, Lawrence Towle	Belmont	12
1919	Howard, Perez Briggs	Newtonville	11
1919	Hubbard, Eliot, Jr.	Boston	11
1920	Hutton, Willis Abrum	Springfield	24
1919	Jackson, Arthur Morrison	Everett	11
1919	Janney, James Craik	Cambridge	11
1919	Jensen, William Christian	Worcester	12
1919	Jordan, Michael Matthew	Worcester	33
1919	Kaufman, Morris Frank	Worcester	12
1919	Lancey, Clifford Scales	Worcester	12
1919	Langill, Morton Howard	Worcester	14
1919	Lanman, Thomas Hinckley	Cambridge	11
1919	Learned, Elmer Turell	Fall River	11
1919	Lena, Hugh Francis	Lawrence	6
1919	Lindberg, Cosa Dell Haskell	Quincy	10

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* Readmitted by Censors.

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Year of Admission.	Name. Residence.	Medical College.
1919	Lindberg, David Oscar Nathaniel, Quincy	10
1920	Lipsitt, Charles Saul, New Bedford	12
1920	Loftus, John Thomas, Worcester	11
1920	Long, Rufus Wilfred, Boston	12
1920	Lunt, Lawrence Kirby, Concord	11
1920	Lurie, Moses Hyman, Boston	11
1919	Lynch, Joseph Michael, Dorchester	12
1919	MacKnight, Richard Patton, Fall River	20
1920	Macmillan, Alexander Stewart, West Somerville	12
1920	Macmillan, Leslie Hooper, West Somerville	12
1919	MacPherson, Donald John, Boston	11
1920	Mann, David Edwin, Rutland	12
1919	Marnoy, Samuel Louis, Chelsea	10
1919	McDevitt, James John, Worcester	30
1919	McGuire, Lee Wesley, Boston	27
1920	Meaker, Samuel Raynor, Boston	11
1920	Meigs, Joe Vincent, Boston	11
1920	Melkonian, Eliza Armenoohi, Boston	12
1919	Meltzer, Philip Edward, Boston	12
1920	Mella, Hugo, Cambridge	29
1919	Merritt, Edward Lester, Fall River	12
1920	Mikolaitis, Casimir John, Lawrence	37
1920	Milot, Joseph Donat, Fall River	38
1919	Milward, Francis William, Jr., Boston	12
1919	Mulhern, Joseph Patrick, Boston	12
1919	Munro, Donald, Boston	11
1920	Murray, Halstead Graeme, Framingham	53
1919	Nash, Francis Joseph, Boston	12
1920	Nowell, Howard Wilbert, Boston	11
1919	Nugent, Arthur John, Worcester	32
1920	Nutter, Denton Gove, Newton	11
1919	Oberg, Frank Thorwald, Worcester	11
1919	O'Dea, Patrick Joseph, Fitchburg	22
1920	O'Hara, Dwight, Waltham	11
1919	Ormsby, Edward Bernard, Boston	12
1919	Osborn, Stanley Hart, Cambridge	12
1919	Osgood, Howard, Cambridge	11
1919	Parkhurst, Albert Elisha, Boston	11
1919	Penn, Henry Samuel, Lawrence	12
1919	Perkins, Ralph Sherburne, Worcester	6
1920	Perron, Albert Ernest, Fall River	8
1919	Pettingill, Warren Martin, West Somerville	12
1919	Pfeiffer, Albert, Boston	26
1919	Pillsbury, Nahum Roy, Dorchester	5
1919	Plouffe, Bernard Louis, Webster	11
1919	Pobirs, Louis Jacob, New Bedford	12
1919	Porter, William James, Winthrop	35
1919	Putnam, James Jackson, Boston	11
1920	Raeder, Oscar Jacob, Boston	3
1920	Ragle, Benjamin Harrison, Brookline	11
1920	Redden, William Rufus, Boston	11
1920	Regan, William Francis, Chelsea	12
1919	Rice, George Arnold, Holden	12
1919	*Rice, Herbert Augustus, Canton	12
1920	Rice, Robert, Haverhill	42
1920	Richards, Thomas Kinsman, Boston	11
1919	Richardson, Ira Walter, Wakefield	11
1920	Robinson, Bernard Herman, Roxbury	12
1920	Rock, John Charles, Boston	11
1919	Rockwell, Llewellyn Harrison, Boston	12
1920	Roe, John Cornelius, Pittsfield	4
1919	Rosen, Edward, Revere	12
1920	Rosen, Kermit Charles, Dorchester	12
1920	Rowe, Frank Elmer, Revere	22
1920	Rowe, Leonard Blake, Natick	22
1920	Rudman, Benjamin William, Boston	12
1919	Ruggles, Edwin Pakenham, Dorchester	10
1920	Ruggles, Ralph Hastings, Boston	12
1919	Salmon, Charles Augustus, Worcester	12
1920	Sandler, Frank Fishel, Revere	12
1920	Sargent, Arthur Forrest, Boston	11
1919	Sargent, Francis Barnard, Mattapan	11
1919	Sartwell, Ransom Harvey, Foxborough	22
1919	Settle, Howard Edwin, Boston	11
1919	Shipton, George Marsden, Pittsfield	6
1919	Shortell, Joseph Henry, Boston	11
1920	Simmons, Manfred Elliston, Lowell	10
1920	Simpson, Charles, Southbridge	38
1920	Smith, Joseph Andrew, Worcester	10
1919	Solomon, Sidney Joseph, Everett	12
1919	Spellissey, Frank Thomas, Worcester	12
1919	Steinberg, Naaman, Boston	12
1920	Stickney, Robert Cole, Beverly	17
1920	Strahlmann, Louis, South Boston	11
1919	Strongman, Bessie Talbot, Boston	6
1919	Sullivan, Russell Francis, Boston	12
1920	Supple, William Raymond, Dorchester	11
1920	Sweeney, John Gerard, Hingham	12
1919	Taylor, John Houghton, Cambridge	11
1919	Tso, Ernest Teh, Boston	11
1920	Thorndike, William Tecumseh Sherman, Boston	11
1920	Tilton, Warren Norwood, Boston	12
1920	Tompkins, Byron Vincent, Sheffield	17
1919	Troupin, Abraham Solomon, Boston	12
1920	Ullian, Louis Joseph, Boston	12
1920	Ulrich, Helmuth, Weston	10
1920	Vaughan, Herbert Gaines, Attleborough	45
1919	Vickery, Eugene Augustus, Boston	11
1919	Viets, Henry Rouse, Jr., Newton	11
1919	*Vrooman, Earl Morey, North Adams	8
1919	Wagner, Harvey Samuel, Pocasset	13
1920	Waite, Anna Jeanette, Worcester	33
1920	Walker, Edmund Eugene Watlington, Boston	24
1919	Watkins, Harvey Middleton, Monson	39
1919	Webster, Frederick Alonzo, Boston	10
1920	Wells, Elwin Harrison, Wakefield	12
1920	White, Joseph Warren, Roxbury	11
1920	Whitehouse, Eugene Dizer, Quincy	11
1920	Wilder, Edward Wheeler, Dorchester	11
1920	Winsor, Allen Pellington, Boston	11
1919	Wood, William Franklin, Boston	12
1920	Woodbury, Stillman Philetus, Millers Falls	9
1919	Woody, MacIver, Boston	11
1919	Wright, Arthur Clarendon, Haverhill	12

221+5=226

Key to Medical Colleges.

3	Washington University Medical School, St. Louis.
4	Georgetown University School of Medicine.
5	Bowdoin Medical School.
6	Johns Hopkins University, Medical Department.
7	College of Physicians and Surgeons, Baltimore.
8	Baltimore Medical College.
9	Long Island College Hospital, Brooklyn.
10	Boston University School of Medicine.
11	Harvard University Medical School.
12	Tufts College Medical School.
13	American Medical Missionary College.
14	Dartmouth Medical School.
15	University of Montpellier, France.
16	Cleveland Pulte Medical College.
17	Columbia University College of Physicians and Surgeons.
19	University of Pennsylvania, Dept. of Medicine.
20	Jefferson Medical College.
21	Hahnemann Medical College of Philadelphia.
22	University of Vermont, College of Medicine
24	McGill University, Faculty of Medicine, Montreal.
26	Middlesex Hospital, London, England.
27	Medical College, University of Cincinnati.
29	University of Georgia, Medical Department
30	University and Bellevue Hospital Medical College
31	Ohio State University College of Medicine.
32	University of Maryland, School of Medicine.
33	Vanderbilt University, Med. Dept., Nashville, Tenn.
35	University of Virginia.
37	Chicago College of Medicine and Surgery
38	Laval University, Quebec, Canada
39	University of Louisville, Medical Department
45	Rush Medical College.
53	Queen's University, Faculty of Medicine, Kingston, Canada

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* Readmitted by Censors.

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Deaths Reported from June 4, 1919, to June 9, 1920.

Admitted.	Name.	Place of Death.	Date of Death.	Age.
1880	Adams, George Edwin	Worcester	Nov. 29, 1919	61
1892	†Allen, Carl Addison	Holyoke	Sept. 11, 1919	71
1914	Barney, Willis Oliver	Boston	June 25, 1919	30
1898	Benner, Herbert Orray	Roxbury	Dec. 22, 1919	54
1916	Berr, Alfred William	Ft. Slocum, N. Y.	Oct. 8, 1918	30
1910	Breen, James Henry	Hudson	Nov. 3, 1919	41
1884	Brown, Daniel Joseph	Springfield	July 8, 1919	58
1869	†Brown, Marshall Lebanon	Flatbush, L. I.	May 5, 1920	83
1897	Cavanaugh, Charles Russell	Dorchester	December, 1919	50
1900	Chase, Edwin Llewellyn	Shrewsbury	April 30, 1920	49
1895	Church, Charles Albert	Millbury	Jan. 13, 1920	60
1893	Clark, Joseph Eddy	Utica, N. Y.	March 4, 1920	62
1880	†Clark, Julius Stimpson	Melrose	Jan. 27, 1920	81
1879	Cook, Charles Henry	Natick	Dec. 3, 1919	74
1872	†Cowles, Edward	Plymouth	July 25, 1919	82
1887	Culbertson, Emma Valeria Pintard Bicknell	St. Petersburg, Fla.	Jan. 8, 1920	65
1887	Deane, Wallace Harlow	Springfield	April 14, 1920	67
1881	De Blois, Thomas Amory	Boston	Feb. 27, 1920	72
1891	Frasier, Sarah Adams Bond	Jamaica Plain	June 28, 1919	60
1887	Frye, Edmund Bailey	Boston	Oct. 23, 1919	63
1886	Gifford, John Henry	Fall River	Dec. 14, 1919	61
1887	Gilman, Warren Randall	Worcester	May 2, 1920	58
1861	†Goodwin, Richard James Plumer	Malden	April 19, 1920	82
1871	†Greenleaf, John Ruggles	Gardner	June 6, 1919	78
1914	Houghton, Neidhard Hahnemann	Brookline	Dec. 26, 1919	58
1859	†Jordan, Charles	Wakefield	June 6, 1920	91
1911	Jordan, Ernest Major	Boston	March 13, 1920	48
1877	Kilby, Henry Sherman	North Attleborough	April 10, 1920	68
1881	Knapp, Philip Coombs	Boston	Feb. 23, 1920	61
1903	Knowlton, Wallace Miles	Boston	Feb. 6, 1920	61
1900	Leslie, Herbert Granville	Newburyport	Sept. 1, 1919	48
1879	†Makechnie, Horace Perkins	West Somerville	Oct. 16, 1919	78
1869	†Mansfield, Henry Tucker	Needham	July 6, 1919	81
1867	†Millard, Henry James	North Adams	May 30, 1920	84
1872	†Moran, John Brennan	Allston	July 12, 1919	80
1884	Murphy, Francis Charles	Roxbury	Nov. 2, 1919	60
1865	†Norris, Albert Lane	Brookline	Aug. 29, 1919	80
1881	Noyes, Ernest Henry	Newburyport	Feb. 7, 1920	66
1855	†Oliver, Henry Kemble	Boston	Oct. 25, 1919	89
1899	Overlock, Melvin George	Worcester	Jan. 30, 1920	54
1882	Palmer, Lewis Merritt	Framingham	June 4, 1919	68
1887	Poirier, Emile	Salem	April 29, 1920	64
1867	†Prescott, Charles Dudley	New Bedford	March 26, 1920	75
1865	†Rice, Austin Bradford	Fiskdale	1919	86
1883	†Richards, George Edwards	Boston	Sept. 8, 1919	73
1868	†Ruddick, William Henderson	South Boston	April 8, 1920	75
1906	Russell, Frederick James	New York City	Dec. 21, 1919	46
1906	Smith, Stafford Baker	Washington, D. C.	Feb. 29, 1920	36
1904	Southard, Elmer Ernest	New York City	Feb. 8, 1920	43
1895	Stowell, Joab	North Amherst	March 26, 1920	57
1863	Swasey, Oscar Fitzallan	Beverly	June 4, 1919	92
1916	Tate, Harry John	Pittsfield	Feb. 11, 1920	30
1885	Twitchell, Edward Thayer	Santa Barbara, Calif.	April 6, 1920	57
1858	†Underwood, George Latham	Belmont	April 1, 1920	88
1882	Whitney, Edward Melville	New Bedford	Feb. 27, 1920	64
1903	Yeaton, George William	Medway	Sept. 27, 1918	39
1913	Zimmerman, Henry	Springfield	Aug. 7, 1919	30

Total, 57 Deaths.

† Retired Fellow

OFFICERS OF THE MASSACHUSETTS MEDICAL SOCIETY.

Chosen by the Council, June 8, 1920.

Alfred Worcester, Waltham, President.
Frederick Ellis Jones, Quincy, Vice-President.
Walter L. Burrage, Jamaica Plain, Secretary.
Arthur K. Stone, Framingham Center, Treasurer.
Edwin H. Brigham, Brookline, Librarian.

STANDING COMMITTEES.

Of Arrangements.—C. H. Lawrence, Jr., Donald Macomber, A. W. Reggio, J. B. Swift, K. G. Percy, F. J. Callanan.

On Publications and Scientific Papers. E. W. Taylor, R. B. Osgood, F. T. Lord, R. M. Green, A. C. Getchell.

On Ethics and Discipline.—J. W. Bartol, Henry Jackson, T. J. Robinson, David Cheever, F. W. Anthony.

On Membership and Finance.—S. B. Woodward, Algernon Coolidge, Jr., Samuel Crowell, Gilman Osgood, Homer Gage.

On Medical Education and Medical Diplomas.—Channing Frothingham, C. F. Painter, J. F. Burnham, A. G. Howard, R. L. DeNormandie.

On State and National Legislation.—Alfred Worcester, F. G. Wheatley, E. H. Stevens, F. E. Jones, J. S. Stone.

On Public Health.—E. H. Bigelow, Annie L. Hamilton, E. F. Cody, Victor Safford, R. I. Lee.

PRESIDENTS OF DISTRICT MEDICAL SOCIETIES.

Vice-Presidents (*Ex-officiis*).

Arranged according to seniority of fellowship in The Massachusetts Medical Society.

F. B. Lund	Suffolk
F. H. Baker	Worcester
S. A. Clark	Hampshire
C. L. Sopher	Middlesex East
E. J. Welch	Middlesex North
H. T. Baldwin	Middlesex South
F. J. Hanley	Plymouth
C. E. Woods	Worcester North
E. H. Bushnell	Norfolk South
D. D. Murphy	Essex North
W. G. Phippen	Essex South
H. G. Ripley	Bristol North
G. W. Winchester	Norfolk
C. P. Curley	Barnstable
A. P. Merrill	Berkshire
J. A. Mather	Franklin
J. M. Birnie	Hampden
E. D. Gardner	Bristol South

COUNCILORS, 1920-1921.

Elected by the District Medical Societies at their Annual Meetings, April 15 to May 15, 1920.

Note.—The initials M. N. C., following the name of a councilor, indicate that he is a member of the Nominating Committee. V.-P. indicates that a member is a councilor by virtue of his office as president of a district society, and so vice-president of the general society. C. indicates that he is chairman of a Standing Committee. Ex-P. indicates ex-President.

Barnstable,
- C. P. Curley, V.P., Provincetown.
- W. D. Kinney, Osterville.
- J. P. Nickerson, M.N.C., West Harwich.
- E. F. Curry, Sagamore.

Berkshire,
- A. P. Merrill, V.P., Pittsfield.
- Henry Colt, Pittsfield.
- B. W. Paddock, Pittsfield.
- W. L. Tracy, M.N.C., Pittsfield.
- P. J. Sullivan, Dalton.

Bristol North,
- H. G. Ripley, V.P., Taunton.
- W. H. Allen, Mansfield.
- W. O. Hewitt, Attleborough.
- F. A. Hubbard, M.N.C., Taunton.

Bristol South,
- E. D. Gardner, V.P., New Bedford.
- E. F. Cody, New Bedford.
- C. F. Connor, M.N.C., New Bedford.
- A. B. Cushman, South Dartmouth.
- W. A. Dolan, Fall River.
- R. W. Jackson, Fall River.
- A. C. Lewis, Fall River.
- A. H. Mandell, New Bedford.

Essex North,
- D. D. Murphy, V.P., Amesbury.
- R. V. Baketel, M.N.C., Methuen.
- J. F Burnham, Lawrence.
- I. J. Clarke, Haverhill.
- T. R. Healy, Newburyport.
- G. E. Kurth, Lawrence.
- F. D. McAllister, Lawrence.
- F. B. Pierce, Haverhill.
- F. E. Sweetsir, Merrimac.

Essex South,
- W. G. Phippen, V.P., Salem.
- H. P. Bennett, Lynn.
- R. E. Bicknell, Lynn.

Essex South—*continued*.
- S. P. F. Cook, Gloucester.
- J. F. Donaldson, Salem.
- S. C. Eveleth, Marblehead.
- H. K. Foster, Peabody.
- W. T. Hopkins, M.N.C., Lynn.
- J. F. Jordan, Peabody.
- G. M. Kline, Beverly.
- S. W. Mooring, Gloucester.
- A. N. Sargent, Salem.
- R. E. Stone, Beverly.

Franklin,
- J. A. Mather, V.P., Greenfield.
- G. P. Twitchell, M.N.C., Greenfield.
- C. L Upton, Shelburne Falls.

Hampden,
- J. M. Birnie, V.P., Springfield.
- F. H. Allen, Holyoke.
- E. P. Bagg, Jr., Holyoke.
- R. S. Benner, Springfield.
- H. F. Byrnes, Springfield.
- J. J. Carroll, Holyoke.
- A. C. Eastman, Springfield.
- M. B. Hodskins, Monson.
- G. H. Janes, Westfield.
- Philip Kilroy, M.N.C., Springfield.
- E. A. Knowlton, Holyoke.
- L. E. Mannix, Chicopee.
- H. C. Martin, Springfield.
- G. L. Schadt, Springfield.

Hampshire.
- S. A. Clark, V.P., Northampton.
- J. G. Hanson, Northampton.
- C. E. Perry, Haydenville.
- D. M. Ryan, M.N.C., Ware.

Middlesex East,
- C. L. Sopher, V.P., Wakefield.
- D. T. Buzzell, Wilmington.
- C. E. Ordway, Winchester.
- R. D. Perley, M.N.C., Melrose.
- P. H. Provandie, Melrose.

Middlesex North,
- E. J. Welch, V.P., Lowell.
- W. B. Jackson, Lowell.
- J. H. Lambert, Lowell.
- G. A. Leahey, Lowell.
- J. A. Mehan, Lowell.
- J. H. Nichols, M.N.C., Tewksbury.
- M. A. Tighe, Lowell.

Middlesex South,
- H. T. Baldwin, V.P., Chestnut Hill.
- D. C. Dow, Cambridge.
- A. W. Dudley, Cambridge.
- F. J. Goodridge, Cambridge.
- L. S. Hapgood, Cambridge.
- F. R. Jouett, Cambridge.
- E. H. Stevens, M.N.C., Cambridge.
- H. P. Walcott, Ex-P., Cambridge.
- John Duff, Charlestown.
- H. J. Keaney, Everett.
- Godfrey Ryder, Malden.
- C. H. Staples, Malden.
- C. E. Mongan, Somerville.
- W. D Ruston, West Somerville.
- L. F. Sise, Medford.
- G. W. W. Whiting, Somerville.
- C. O. Chase, Watertown.
- Richard Collins, Waltham.
- C. A. Dennett, Arlington.
- W. E. Fernald, Waverley.
- Alfred Worcester, Pres., Waltham.
- E. A. Andrews, Newton.
- F. G. Curtis, Chestnut Hill.
- H. S. Rowen, Brighton.
- F. R. Stubbs, Newton.
- G. R. West, Newton Center.
- G. W. Gay, Ex-P., Chestnut Hill.
- C. E Hills, South Natick

Middlesex South—*continued.*
G. A. Bancroft, Natick.
E. H. Bigelow, C., Framingham Center.
A. K. Stone, Treas., Framingham Center.
Fresenius Van Nüys, Weston.

Norfolk.
G. W. Winchester, V.P., Mattapan.
C. E. Allard, Dorchester.
W. B. Batchelder, Dorchester.
D. N. Blakely, Brookline.
E. J. Brearton, Dorchester.
E. H. Brigham, Libra., Brookline.
F. P. Broderick, Jamaica Plain.
A. N. Broughton, M.N.C., Jamaica Plain.
W. L. Burrage, Sec'y, Jamaica Plain.
W. H. Greene, Roxbury.
W. A. Griffin, Sharon.
R. W. Hastings, Brookline.
H. T. Holland, Jamaica Plain.
G. W. Kaan, Brookline.
W. B. Keeler, Roxbury.
Bradford Kent, Dorchester.
F. P. McCarthy, Milton.
A. P. Perry, Jamaica Plain.
M. V. Pierce, Milton.
H. H. Powers, Brookline.
Victor Safford, Jamaica Plain.
G. H. Scott, Roxbury.
Max Sturnick, Roxbury.
W. J. Walton, Dorchester.
Augusta G. Williams, Brookline.

Norfolk South.
E. H. Bushnell, V.P., Quincy.
C. S. Adams, Wollaston.
F. E. Jones, Vice.-Pres., Quincy.
J. H. Libby, East Weymouth.
D. B. Reardon, Quincy.
G. H. Ryder, M.N.C., Quincy.

Plymouth.
F. J. Hanley, V.P., Whitman.
W. C. Keith, Brockton.
C. E. Lovell, Whitman.
Gilman Osgood, Rockland.
F. J. Ripley, Brockton.
F. G. Wheatley, M.N.C., North Abington.

Suffolk.
F. B. Lund, V.P., Boston.
J. L. Ames, Boston.
S. H. Ayer, Boston.
J. W. Bartol, C., Boston.
Robert Bonney, East Boston.
J. T. Bottomley, Boston.
V. Y. Bowditch, Boston.
E. G. Brackett, Boston.
J. E. Briggs, Boston.
F. J. Cotton, Boston.
E. A. Crockett, Boston.
Loretta J. Cummins, Boston.
Lincoln Davis, Boston.
Channing Frothingham, C., Boston.
W. J. Gallivan, South Boston.
J. E. Goldthwait, Boston.
G. S. Hill, Boston.
W. C. Howe, M.N.C., Boston.
F. L. Jack, Boston.
Henry Jackson, Boston.
D. F. Jones, Boston.
F. A. Locke, Boston.
F. T. Lord, Boston.
R. H. Miller, C., Boston.
J. J. Minot, Boston.
F. S. Newell, Boston.
E. H. Nichols, Boston.
B. W. Pond, Boston.
Edward Reynolds, Boston.
W. H. Robey, Jr., Boston.
Stephen Rushmore, Boston.
D. D. Scannell, Boston.
C. L. Scudder, Boston.

Suffolk—*continued.*
G. B. Shattuck, Ex-P., Boston.
C. M. Smith, Boston.
Myles Standish, Boston.
J. S. Stone, Boston.
E. W. Taylor, C., Boston.
Louisa P. Tingley, Boston.
F. H. Williams, Boston.

Worcester.
F. H. Baker, V.P., Worcester.
W. P. Bowers, Ex-P., Clinton.
W. J. Delahanty, Worcester.
G. E. Emery, Worcester.
M. F. Fallon, Worcester.
Homer Gage, Worcester.
J. O. Généreux, Webster.
R. W. Greene, Worcester.
David Harrower, M.N.C., Worcester.
E. L. Hunt, Worcester.
A. G. Hurd, Millbury.
W. L. Johnson, Uxbridge.
G. F. O'Day, Worcester.
C. B. Stevens, Worcester.
G. O. Ward, Worcester.
F. H. Washburn, Holden.
C. D. Wheeler, Worcester.
S. B. Woodward, Ex-P., C., Worcester.

Worcester North.
C. E. Woods, V.P., Lunenburg.
W. E. Currier, Leominster.
E. L. Fiske, M.N.C., Fitchburg.
J. G. Henry, Winchendon.
W. F. Sawyer, Fitchburg.

CENSORS, 1920-1921.

Barnstable.
J. P. Nickerson, Supervisor, West Harwich.
C. E. Harris, Hyannis.
E. E. Hawes, Hyannis.
J. H. Higgins, Marstons Mills.
E. S. Osborne, West Dennis.

Berkshire.
Henry Colt, Supervisor, Pittsfield.
A. C. England, Pittsfield.
J. F. Crowley, Adams.
O. J. Brown, North Adams.
E. H. Howard, Pittsfield.

Bristol North.
F. A. Hubbard, Supervisor, Taunton.
H. B. Baker, Taunton.
T. F. Clark, Taunton.
A. R. Crandell, Taunton.
T. J. Robinson, Taunton.

Bristol South.
W. A. Dolan, Supervisor, Fall River.
W. E. Blaine, Mattapoisett.
W. T. Learned, Fall River.
C. J. Leary, New Bedford.
S. V. Merritt, Fall River.

Essex North.
F. D. McAllister, Supervisor, Lawrence.
J. E. Bryant, Haverhill.
R. C. Hurd, Newburyport.
A. M. Hubbell, Haverhill.
F. S. Smith, North Andover.

Essex South.
J. F. Donaldson, Supervisor, Salem.
A. T. Hawes, Lynn.
F. W. Baldwin, Danvers.
J. A. Shatswell, Beverly.
J. W. Trask, Lynn.

Franklin.
C. L. Upton, Supervisor, Shelburne Falls.
H. N. Howe, Greenfield.
R. H. Philbrick, Northfield.
A. L. Newton, Northfield.
Charles Moline, Sunderland.

Hampden,
R. S. Benner, Supervisor, Springfield.
J. M. Tracy, Springfield.
M. W. Harrington, Indian Orchard.
O. R. Blair, Springfield.
E. L. Davis, Springfield.

Hampshire,
J. G. Hanson, Supervisor, Northampton.
J. E. Hayes, Northampton.
N. C. Haskell, Amherst.
W. J. Collins, Northampton.
W. B. Segur, Enfield.

Middlesex East,
P. H. Provandie, Supervisor, Melrose Highlands.
I. T. Cutter, Winchester.
T. E. Caulfield, Woburn.
C. R. Henderson, Reading.
J. P. Bixby, Woburn.

Middlesex North,
J. H. Lambert, Supervisor, Lowell.
E. J. Clark, Lowell.
G. O. Lavalée, Lowell.
J. A. Gage, Tyngsboro.
J. P. McAdams, Lowell.

Middlesex South,
F. J. Goodridge, Supervisor, Cambridge.
F. G. Smith, Somerville.
C. B. Fuller, Waltham.
I. J. Fisher, West Newton.
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C. F. Stack, Hyde Park.
E. T. Rollins, Jamaica Plain.
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Norfolk South,
J. H. Libby, Supervisor, East Weymouth.
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F. R. Dame, Braintree.
W. L. Sargent, Quincy.
V. M. Tirrell, South Weymouth.

Plymouth,
F. J. Ripley, Supervisor, Brockton.
J. H. Drohan, Brockton.
E. J. Beaulieu, Whitman.
W. W. Fullerton, Brockton.
L. B. Reed, Plymouth.

Suffolk,
C. M. Smith, Supervisor, Boston.
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R. H. Vose, Boston.
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W. H. Rose, Worcester.
E. H. Mackay, Clinton.
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Worcester North,
W. F. Sawyer, Supervisor, Fitchburg.
G. P. Norton, Fitchburg.
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C. H. Jennings, Fitchburg.
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1920-1921.

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Miscellany.

PNEUMONIA AND FATIGUE.

IN the issue of the JOURNAL for Oct. 31, 1918, was published an article by Dr. William N. Cowles of Boston on "Fatigue as a Contributory Cause of Pneumonia." This paper received some comment in the daily press at the time and was followed by the publication of a letter on the same subject by Dr. Samuel Delano, of this city, which seems so pertinent to the matter as to deserve appearance in these columns:

As a physician who has bestowed some little thought upon exercise and, in book form, given recent expression to his views, I am grateful to the *Herald* for its editorial on "Pneumonia and Fatigue." I find it a very important topic. Early in the war I said that I hoped we should learn how much stamina there was back of athletics. Muscle is more or less of a trick and the capacity to perform an athletic stunt can always be acquired through sufficient application; but the specific feat takes account of the body only as a machine; which is a distinctly opprobrious term. For the body is a vital machine, and our test of its perfection the possession of vitality, by which we mean the power to last and of stamina, which is another way of saying—power to resist.

The gathering together of so many men with all manner of previous training, and with no inconsiderable body of them previously hard drivers in athletics, would seem to offer a golden opportunity for studying the relation between a man's antecedent habits and his capacity to ward off sickness and disease. I fear me, though, the occasion will not find the man. He would have to be a medical practitioner of broad experience and logical mind, and individual cases would have to be studied carefully. Still, should there prove to be a glaring discrepancy between forceful athletics and possession of vital force, the deduction might be made in a broadly general way.

Out of our experience with the present epidemic, one is forced to the preliminary conclusion, however, that in the cantonments stamina must be minus or vital powers at a low ebb, because, taking the community at large, the mortality has been anything but uniform; from that point of view the cantonment figures mount to a height far and away beyond any proportionate average.

The training program of the cantonments, both on paper and from what we can hear, has seemed appalling. It appears to rest on the principle that the more you take out of a man the more you put in. A young officer detailed for work put to me the question whether three-quarters of an hour of setting-up directly after breakfast, followed by a run around, was reasonable. He told me he protested, and I assured him I should. The whole subject deserves keen analysis. Work is work, but exercise need not be work. Above all, a setting-up shouldn't be work at all.

It is to be feared that the athletic instructors cannot be at all relied upon to draw conclusions for guidance. They are very keen propagandists and not far-seeing. Too much of their advocacy is based upon the tenet that whatever is is right, and the argument is moved up accordingly. This scarcely meets the demands of analysis and logic. Only yesterday "Old Bill" was using athletics to account for all our success—and presently the whole world is to be doing one hundred yards in ten seconds, to its eternal advantage. One can see where the cultivation of sports is a great school for actual fighting, without being blind to the fact that actual fighting is but a relatively small part of the business of being a soldier. The desideratum is: to carry a man through the whole varied business of being a soldier without his succumbing.

SAMUEL DELANO, M.D.

PRELIMINARY REPORT OF UNITED STATES BIRTH STATISTICS.

IN the birth-registration area of the United States 1,353,792 infants were born alive in 1917, representing a birth rate of 24.6 per 1,000 of population. The total number of deaths in the same area was 776,222, or 14.1 per 1,000. The births exceeded the deaths by 74.4 per cent. For every state in the registration area, for practically all the cities, and for nearly all the counties, the births exceeded the deaths, in most cases by considerable proportions. The mortality rate for infants under 1 year of age averaged 93.8 per 1,000 living births.

The birth-registration area, established in 1915, has grown rapidly. It comprised, in 1917, the six New England states, Indiana, Kansas, Kentucky, Maryland, Michigan, Minnesota, New York, North Carolina, Ohio, Pennsylvania, Utah, Virginia, Washington, Wisconsin, and the District of Columbia, and had an estimated population of 55,000,000, or about 53 per cent of the estimated total population of the United States in that year.

The birth rate for the entire birth-registration area fell below that for 1916 by two-tenths of one per 1,000 population; but the death rate was less by six-tenths of one per 1,000 than in 1916. Thus the excess of the birth rate over the death rate for 1917, which amounted to 10.5 per 1,000, was somewhat greater than the corresponding excess for 1916, 10.1 per 1,000 although it fell slightly below that for 1915, 10.9 per 1,000. If the birth and death rates prevailing in any one of these three years were to remain unchanged, and if no migration were to take place to or from the area to which they relate, its population would increase at the rate of slightly more than 1 per cent per annum, or a little more than 10 per cent in a decade. This would be about half the rate—21 per cent—by which the entire population of the United States increased between 1900 and 1910.

Of the total number of births reported, 1,280,288, or 24.5 per 1,000, were of white infants, and 73,504, or 25.8 per 1,000, were of colored infants. The death rates for the two elements of the population were 13.7 and 22.5 per 1,000, respectively.

The infant mortality rate—that is, the number of deaths of infants under 1 year of age per 1,000 born alive—throughout the birth-registration area as a whole was 93.8 in 1917, as against 101 in 1916 and 100 in 1915. This is equivalent to saying that in 1915 and 1916, of every 10 infants born alive 1 died before reaching the age of 1 year, whereas in 1917 the corresponding ratio was a trifle more than 1 in 11. Among the 20 states these rates ranged from 67.4 for Minnesota to 119.9 for Maryland; and for the white population separately the lowest and the highest rates were 66.3 for Washington and 109.5 for New Hampshire.

The infant mortality rates vary greatly for the two sexes and for the various nationalities. The rate for male infants in 1917, 103.7 per 1,000 living births, was nearly 25 per cent greater than that for female infants, which was only 83.3. When the comparison is made on the basis of race or nationality of mother a minimum of 66.2 per 1,000 births is shown for infants with mothers born in Denmark, Norway and Sweden, and a maximum of 172.6 for infants with mothers born in Poland, while for Negro children the rate was 148.6.

The reports from the registration area show the birth of 14,394 pairs of twins and 155 sets of triplets in 1917—in all, 29,253 infants, or a little more than 2 per cent of the total number born.

The reports for 1,241,722 of the births occurring in 1917 contained information as to number of child in order of birth. Of these reports, 339,042 were for the first child born to the mother, 264,044 for the second child, 191,528 for the third, 134,331 for the fourth, and 95,931 for the fifth. In the remaining 216,846 cases, or 17.5 per cent of the entire number for which information upon this point was obtained, the total number of children borne by the mother was 6 or more; in 37,914 cases it was 10 or more; in 1,600 cases, 15 or more; in 56 cases, 20 or more; and in one case, that of a colored woman, the birth of a twenty-fifth child was reported.

The total number of children borne by the mothers who gave birth to these 1,241,722 infants in 1917, in whose cases data were available as to previous births, was 4,093,908. The reports for 1,194,621 of the births occurring in 1917 contained information as to the entire number of children borne by the mothers and still living, and gave a total of 3,443,466, or an average of very nearly 3 living children in each family in which a birth took place in 1917.

A PHYSICIAN OF THE EARLY CHRISTIAN ERA.

The *Lancet* has recently published the following item about a forgotten physician of the second century of the Christian era.

Samuel, surnamed Schabour, and also Arioch, and mentioned in Jewish literature as Mar Samuel was born at Nehardea (destroyed by Odenathus in A. D. 259) about A. D. 160. His father, Abba, was an important person there. Physically insignificant, being abnormally short and ill-developed, intellectually Samuel was great. He was educated at Nehardea by Rabbi Leir, a learned man who turned out several famed pupils. Samuel studied and specialized in various branches of learning, but his chief reputation and, indeed, the profession he finally made his own, was that of the healing art. As a student he early made such progress in medicine that he was permitted to perform autopsies, and we have records of some of these. There is an account of a decision of his as to how large a piece of skull could safely be removed in case of fracture. He is quoted as stating after examination of an aborted fœtus that it was 41 days old, showing an intimate knowledge of the conformation of the product of conception at various stages. His opinion upon the abnormality termed spina bifida is also upon record. He must have carried out anatomical dissections, because there are extant quotations from his views on the limit of the spinal marrow. He appears to have been cognisant of the lacrimal gland and of the atrophy of which it is susceptible under certain circumstances in advanced age. His treatise upon the pathogenic symptoms following upon abrupt changes of diet is quite modern in thought. All varieties of regimen, he said, are liable to be the starting point of some malady.

For external diseases he sought natural causes for their occurrence and for their fatal termination; so for penetrating sores he accused the air of rendering them incurable. Also for wounds which finally poisoned the system, he said the cause was some virus upon the weapon that had inflicted the injury. In pathology he endeavored to indicate for each malady the characteristic symptoms: for grave rhinitis, following probably a polypus ulcer, he said it could be detected by the offensive odor proceeding from the nasal organ. Migraine he attributed to excessive solitude and introspection. Magic as a curative he ignored. As to the propriety of attempting cures upon the Sabbath he was entirely favorable. He advocated the use of the speculum in order to ascertain if hemorrhage proceeded from the vagina or the uterus. He was a great believer in bleeding as a remedy for many ills. Cleanliness was a main feature of his preventive teaching. The hands should be washed at least twice a day to prevent eye affections. He admitted his inability to cure three illnesses: that proceeding from eating green dates, if unripe and sour; the evil consequences of wearing a damp linen waistband as a girdle; and illness caused from going to bed after eating too hearty a meal and taking no exercise. Perhaps he also intended to convey that patients acting so foolishly were unworthy of being given remedial relief.

UNITED STATES CIVIL-SERVICE EXAMINATION.

Junior Physiologist.

July 6, 1920.

The United States Civil Service Commission announces an open competitive examination for junior physiologist. A vacancy at Edgewood Arsenal. Edgewood, Md., at $2,000 a year and quarters for single employee, and vacancies in positions requiring similar qualifications, at this or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Appointees whose services are satisfactory may be allowed the temporary increase granted by Congress of $20 a month. There is only a possibility of this temporary increase being allowed the appointee at Edgewood Arsenal.

In filling vacancies in positions with headquarters outside of Washington, D. C., certification will be made of the highest eligibles residing nearest the vicinity of the place at which the appointee is to be employed, except that upon the request of the department certification will be made of the highest eligibles on the register for the entire country who have expressed willingness to accept appointment where the vacancy exists.

All citizens of the United States who meet the requirements, both men and women, may enter this examination; appointing officers, however, have the legal right to specify the sex desired in requesting certification of eligibles. For the present vacancy male eligibles are desired.

The duties of the appointee will be to assist in extensive work on toxic compounds.

Competitors will not be required to report for examination at any place, but will be rated on the folowing subjects, which will have the relative weights indicated, on a scale of 100: (1) Physical ability, 10; (2) Training and experience, 90.

Competitors will be rated upon the sworn statements in their applications and upon corroborative evidence.

Applicants must have completed a four years' high-school course or have equivalent education. In addition they must have completed two years of a course in a medical school of recognized standing, qualifying in physiology, pharmacology, and pathology, with laboratory work, or have had at least one year's experience in laboratory work and experimental pharmacology and toxicology.

Applicants must have reached their twenty-first birthday on the date of the examination.

Applicants must submit with their applications their unmounted photographs, taken within two years, with their names written thereon. Proofs or group photographs will not be accepted. Photographs will not be returned to applicants.

Applicants will be admitted to this examination regardless of their residence and domicile; but only those who have been actually domiciled in the State or Territory in which they reside for at least one year previous to the examination, and who have the county officer's certificate in the application form executed, may become eligible for permanent appointment to the apportioned service in Washington, D. C.

Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Calif.; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone; or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Applications should be properly executed, excluding the medical certificate, and must be filed with the Civil Service Commission, Washington, D. C., prior to the hour of closing business on July 6, 1920.

Correspondence.

PHYSICIANS IN POLITICS.

Milford, Mass., June 4, 1920.

Mr. Editor:

The editorial in the Journal of May 13 on "Legislation on Medical Matters" is bearing fruit. We have in this section of the state a local medical society which was organized 67 years ago, and has held regular meetings ever since—which we think is doing pretty well in consideration of the sparseness of our population and the limited area to which we are confined. We are country doctors, we read the Journal, and we think for ourselves.

The particular fruit to which I allude was a resolution adopted unanimously at our June meeting, yesterday. I give it without further comment.

> "*Resolved*, That the Thurber Medical Association hereby strongly endorses the candidacy of Dr. William L. Johnson of Uxbridge for Senator from the Fourth Worcester District. Important questions of public health are multiplying each year before the legislature, and men are needed to deal with these questions who understand them. These considerations, coupled with the extremely small number of medical men to be found in that body, lead us to favor Dr. Johnson for this important office. In his three years of service in the lower house, he has shown himself an efficient member, a convincing speaker, a man of convictions, who is not afraid to stand by them. Believing that men of this character are needed in the legislature, we appeal to the voters of the district to ratify our endorsement of Dr. Johnson at the polls."

We took this action not in the spirit of partisan politics, but in the interest of public health; and in this spirit we send you this note.

F. T. Harvey, *President*.
J. M. French, *Secretary*.

The Boston Medical and Surgical Journal

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Original Article.

PROSTATECTOMY.*

BY HENRY G. BUGBEE, M.D., F.A.C.S., NEW YORK,

Urologist to St. Luke's, Woman's, and Lying-In Hospitals.

ANY surgical procedure of import passes through three stages in its development: *First*, the recognition of a pathological condition, and preliminary crude attempts at its relief. Such early endeavors are based upon imperfect data, and while they represent pioneer work, the results are so irregular that criticism retards the progress of development. If, however, there is an underlying truth and justice in the procedures, the development passes on to the *second* stage, namely, that of widespread experimentation, the discovery of a pathological entity, the presentation of numerous operative procedures, some good, some bad, with varying results, fluctuation of opinion causing first a return to palliative measures then to the more radical, but always with a trend forward, with increasingly better results, and the ultimate formation of a fundamental surgical foundation. This leads to the *third* stage of crystallization, definitely placing the operative procedure in the realm of surgery, where it will stand as a logical and sound method of relief, to be modified from time to time, but remaining essentially the same in principle.

Where in surgery is there a more perfect example of these steps in surgical development than in that of the operative relief of prostatic obstruction of the vesical neck? It is doubtful if any other surgical procedure will ever have such an interesting and striking history in its development, for the progress in the treatment of this class of cases has accompanied and possibly has largely accounted for the placing of urology upon a definite footing as a special branch of surgery, lifting it out of the realm of venereal diseases. I would not minimize the accompanying era in the development of kidney surgery, for the two go hand in hand, but the prostate was the old dividing line between venereal and general surgery. The dividing line has been removed, and urology stands today as a highly specialized branch of surgery

Unquestionably diagnosis is responsible. The possibility of studying the urinary tract as an entity and its relation to the human organism gave the true light to vesical obstruction, and made the second stage of its surgical development possible.

It seems to me we are now in the third

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* Presented, by invitation, before the New England Urological Society, January 28, 1920.

stage of development in prostatic surgery, namely, that of crystallization. Out of these two periods of progress, out of this mass of pathological and clinical study, operative procedures formulated, and results published, what are our present-day conclusions, and how shall these cases best be handled?

To logically lead up to this present-day period, I would like to go over briefly the preceding stages. There can be no clear-cut division of time covered by these stages of development. In this case, as in the development of any method of treatment, there has been the carrying forward from one era to the next of certain lines of effort. However, for purposes of convenience, the first stage may be considered to include the period which brings us to the real study of the anatomy and physiology of the prostate, namely, the latter half of the eighteenth and the early part of the nineteenth centuries, and the period covered from this time to the invention of the cystoscope, by Nitze of Dresden, in 1879. The second stage covers the period from 1879 to 1900 (for arbitrary purposes). The third and last stage embraces the years of crystallization following the introduction of suprapubic prostatectomy, bringing us to the present time.

It is manifestly impossible, and likewise unnecessary, in an article of this character, to give in detail an account of the evolution of prostatic surgery, since this ground has been covered so ably by so many writers, notably, of recent years, by Deaver.[1] Nor need an attempt be made to give an exhaustive bibliography, selected from the thousands of contributions on the subject. I shall attempt merely to sketch, as briefly as possible, the chief steps in the progress toward our present status, with no claim to originality of statement, and with due credit to my predecessors and colleagues who have made exhaustive researches concerning and contributions to the history of prostatic surgery.

First Stage.

The biblical allusion to hypertrophy of the prostate, to which Sir Everard Home[2] directs attention, can hardly be considered as indicating any recognition on the part of the practitioners of the healing art of the time of the Ecclesiastes. While the two chief effects of prostatic enlargement may be conceded to be poetically described (Ecclesiastes, Chapter XII, Verse 6), involuntary passage of urine as "the pitcher broken at the fountain," and complete stoppage as "the wheel broken at the cistern," there is no reason for believing that any true conception existed of the cause of these manifestations or accompaniments of old age. Indeed, it appears that Herophilus (235-280 B. C.), who first gave a name to these obstructing elements which suggested their location, mistook the "prostate glandulosae" for the seminal vesicles.

This error is generally attributed to lack of knowledge of human anatomy, due to the forbidding of dissection, and to the acceptance of the relationships found in lower animals as applicable to man. The prostate, according to Todd,[3] is very constant in existence, being found in all orders of mammalia excepting, perhaps, the greater number of rodentia, the mole and the hedgehog. It varies from the human prostate in both external and internal conformation, being bifid, for example, in some animals, thus resembling the seminal vesicles in the human. This mistake is found in books on animals of much later date. Sir T. Browne,[4] for example, in 1646, says "An horse or bull may generate after castration, that is, from the stock . . . . of seminal matter already prepared and stored up in the prostates or glandules of generation." Nearly a century later still, W. Gibson[5] says of the horse, "There are several glandular bodies situated . . . . immediately before the seed bladders, and are therefore called prostates."

The real discovery of the prostate seems to have been made by a Venetian physician, Nicolo Massa, who died in 1563. Nearly a century elapsed before this discovery was associated with "the pitcher broken at the fountain," or "the wheel broken at the cistern." In 1649, Riolanus,[6] the contemporary and antagonist of Harvey, suggested that the swelling of the prostate might cause obstruction of the bladder. There seems to be no proof, however, that this suggestion led him to incise the neck of the bladder, through the perineum, for the relief of urinary retention, which he did successfully in several cases. Nor is it established that the retention, in these cases, was due to hypertrophy of the prostate. It seems fair to assume, however, that the suggestion of Riolanus marked the beginning of operative measures for the relief of urinary symptoms caused by enlargement of the prostate, though it has been suggested by Ricketts[7] that the father of lithotomy, Ammonius Lithotomus, an Egyptian surgeon of Alexandria, who lived about the time of Hippocrates (B.C. 460-357), really made the first move in the direction leading to the discovery of the prostate. Undoubtedly, the widely practised procedure of perineal lithotomy may be credited with a large share in this early stage of the evolutionary process which has culminated in the prostatic surgery of today.

It goes without saying that little real progress could be made toward a rational understanding or explanation of the suggested obstructive action of the prostate until this body itself,—its structure and its relationships,—had been more definitely determined and described. The work, therefore, of Morgagni[8] (1760), Hunter[9] (1788), Baillie[10] (1793), Home[2] (1805+), and others who cleared up the anatomy of the gland, may be considered as having given a very vital impetus to the development of prostatic surgery. In the years which followed, many surgical procedures were suggested and tried out for the relief of symptoms by that time well recognized as emanating from a pathological condition of the prostate.

Tunneling. Barring the brief reference to the incision of the neck of the bladder through the perineum by Riolanus, the first procedure for the relief of retention caused by the enlarged prostate seems to have been the tunneling operation. It is recorded by Chopart[11] that Astruc, who died in 1766, suffered from retention of urine, which was relieved by his attendant who, in attempting to pass a catheter, met an obstruction, which he proceeded to perforate by means of a lance-shaped stylet introduced through a catheter having an open end. The urine was drawn off and the catheter left in place for fifteen days. During the remaining ten years of Astruc's life the catheter was introduced, when necessary, through this passage, which persisted. This, it will be seen, was an emergency measure, not based on a knowledge of the anatomy of the parts.

Sir Everard Home,[2] who credits himself with having discovered and described the middle lobe of the prostate, and who described the gland in 1806, advocated and practiced the tunneling of the obstructing gland by means of a catheter. John Hunter,[9] in 1853, reports having followed this method, and Chopart,[11] in the same year, followed this procedure, with fatal results, in several cases. It is interesting to note the tenacity with which surgeons held to such a dangerous procedure as tunneling. Brodie,[12] in 1865, employed the method, and Bilroth,[13] in 1881, resorted to it in one fatal case. Many others, meanwhile, followed the lead of the pioneer in this hazardous path.

Compression. While not, strictly speaking, a surgical method, the systematic compression for the purpose of maintaining a patulous urethra may be mentioned as one of the early efforts at relief, or rather prevention, of urinary retention caused by prostatic enlargement. Physick,[14] of Philadelphia, is credited with having conceived and employed this idea in the early part of the 19th century. He introduced an elastic hollow tube through the compressed prostatic urethra, and then distended the urethra by means of fluid pressure. The operation was repeated every two or three days, the pressure being maintained for from five to fifteen minutes, or as long as the patient could endure it, for it was by no means a painless procedure. Leroy d'Etoilles[15] (1846), and Mercier[16] (1856), made use of compression with a view to reducing the size of the prostate or moulding its growth, their idea being to overcome the natural subpubic curve of the urethra. They used a flexible catheter, through which they introduced a straight stylet. The method was so painful that it failed to meet with general acceptance. And yet, in 1881, we find Harrison[17] advocating systematic compression, for the application of which he devised various olivary bougies.

Prostatotomy. The first real step in the direction of rational surgical procedure comes within this period, though some earlier operations are held by some to be the progenitors of the later procedures of this character. Perineal lithotomy, or perineal cystotomy for the removal of a "hard mass," however, are not generally regarded as definite steps, of intentional nature, in the evolution of prostatic surgery. The same may be said of suprapubic cystotomy, first practised by Rossetus in 1590, and described, more than two hundred years later, by Amussat[18] as having been performed by him for the removal of a calculus and a protruding mass of prostate; and likewise of perineal prostatotomy combined with lithotomy, practised by Sir William Fergusson[19] about 1848.

Urethral prostatotomy, however, as practised by Guthrie,[20] in 1834, for the "division of the bar at the neck of the bladder," may be considered a definite surgical procedure which advanced by so much the evolution of the surgical treatment of prostatic obstruction. He used a concealed blade introduced through a catheter. Three years later Mercier[10] devised the "prostatome" and "prostatectome" for the urethral prostatotomy, and Civiale and Leroy d'Etoilles, in 1846, invented other instruments, all three claiming priority and forgetting or ignoring Guthrie, the originator of urethral prostatotomy. The method, however, is generally known as Mercier's method, and modifications of the procedure are called modifications of the Mercier method.

The galvano-cautery method of Bottini,[21] introduced about 1873, but little known outside of Italy until attention was directed to it by Freudenberg,[22] in 1897, was in reality a modification of the original Guthrie urethral prostatotomy, known as Mercier's method. The many modifications of the Bottini method which followed, and the enormous literature of advocacy and deprecation, are familiar to all, and need not be recounted here. Generally speaking, all these procedures served their turn in advancing the development of prostatic surgery, and have taken their place among the past issues, except when indicated for some special reason. This includes the application of the Bottini galvano-cautery method through a perineal wound, as advocated by Belfield,[23] in 1886, and followed by many operators, and its application through a suprapubic opening, as practised by Watson,[24] Bangs,[25] and others.

Prostatotomy, with its various modifications, forms an excellent illustration of the overlapping of the stages of development, previously mentioned. The earlier advocates of this procedure, including Bottini, were not aided by the cystoscope in their efforts. Those who employed the Bottini method and its various modifications, following the lead of Freudenberg, were more fortunate in this regard.

Injection. During this stage of development various attempts were made to cause shrinkage or atrophy of the enlarged portion of the prostate through the injection of various substances. Thus Heine,[26] in 1874, injected iodine into the gland, while Langenbeck[27] and Iversen[28] injected ergotine subcutaneously. The procedure was not generally adopted, since it was found that suppuration and even death might follow.

The surgical attempts of this stage may be summed up in the following statement made by W. J. Mayo[29] in 1889: "Much ingenuity has been expended in contriving instruments for attack upon the prostate by the urethra; these operations are blind, consequently unsurgical, and lack the essential element of drainage. Mercier's method and instruments are best known. As usual, electricity with its occult power has been called to aid the solution of the problem. The most that can be said in its favor is that it pays—the physician. Parenchymatous injection into the gland of iodine, iodoform, ergot, etc., has been frequently tried, but it is difficult to separate the actual benefit of such practice from other measures of relief used."

Second Stage. This stage, the period of development and progress, marks the application of diagnostic methods which established urology as a specialty. The bladder neck was carefully studied intravesically, and all the perfections of modern surgical technic were applied to surgical procedures upon the prostate, with a broadening of the field and with increasingly satisfactory results.

As is always true, during this period of development of our surgical procedures many incompetent surgeons entered the field. Efforts to gain precedence resulted in poorly conceived and poorly executed technic, with corresponding periods of retardation, but with the slow elimination of the undesirable and the selection of the good. With keener observations from the pathological and clinical standpoints, with the development of better operators and more reliable reports, the progress was toward the present establishment of a surgical entity.

The use of the cystoscope was of great value in differentiating prostatic obstruction from other vesical lesions and in studying the intravesical aspect of the prostate, leading to a more careful classification of types of obstruction, with the development of operative procedures suitable to the type presented. The question of kidney elimination resulted in the study of this element, and a more intelligent analysis of the patient's general condition, too, was made.

Many of the methods to which attention was directed during the second stage of development were not new, having been employed, in some instances, for many years, or having undergone various deaths and revivals in modified form.

Cystotomy, Perineal and Suprapubic. Urinary Fistula. It has already been pointed out that the cystotomy, perineal and suprapubic, had long been called into requisition, as a purely emergency measure or otherwise, when it became necessary to establish drainage of the bladder. The recrudescence of these measures finally led to the making of a urinary fistula, which, with the concomitant drainage of the bladder, was pronounced[1] a distinct advance in therapeusis. Like cystotomy, the fistula operation had undergone various revivals when Hunter McGuire[30] (in 1888) devised his "teapot" operation, making a low opening into the bladder sutured to the highest point in the external incision, the fistulous tract bearing the same relation to the bladder that the spout does to the teapot. In 1899, Poncet and Dolore,[31] made an exhaustive study of the application of suprapubic fistula in the treatment of prostatic enlargement. Harrison,[32] beginning in 1881, advocated and practised the perineal method of establishing a urinary fistula.

Castration, Vasectomy, Etc. It appears that in the eighties it occurred to various operators, —and the suggestion was put into practice in sporadic cases,—to resort to castration for the purpose of relieving symptoms caused by hypertrophy of the prostate. White[33] and Ramm,[34] the former in June and the latter in September, 1893, advocated the procedure, thus inaugurating a widespread vogue of operations involving castration and various measures dealing with the spermatic cord. Doubtless all of these operators based their efforts on the findings of John Hunter[9] who, more than fifty years before White and Ramm popularized the procedure, had found that castration in young animals checked the development of the prostate, while in the fully grown animal it caused atrophy of the gland. The high mortality resulting from castration caused Mears[35] to suggest vasectomy. These castration operations were of only temporary popularity, and made way for the more rational procedures which have persisted to the present time.

Miscellaneous Surgical Procedures. During this stage of development various other surgical procedures were suggested and tried out, all having in view the atrophy of the enlarged prostate. Ligation of the iliac arteries, removal of the vesico-venous plexus, and tenotomy of the levator of the prostate, were among the methods employed and eventually abandoned.

Prostatectomy, Perineal and Suprapubic. These procedures, like others in the sequence, overlap in their development, their history taking us back into the first stage, and carrying us forward into the third.

The question asked by Gibbs,[36] in 1857, is thought to have foreshadowed perineal prostatectomy: "Can not enlargement of the middle lobe of the prostate gland be removed by the lateral operation of lithotomy?" At any rate, nine years later Küchler[37] employed perineal prostatectomy in a case of malignant disease of the prostate. The procedure was employed in sequence by Bilroth,[13] Demarquay,[38] Langenbeck,[27] Spanton,[39] Leisrink,[40] Watson,[24] and others, so that it soon came to be employed for the complete as well as for the partial removal of the prostate, and for benign as well as malignant conditions. The literature of the last ten or fifteen years of the nineteenth century includes the names of many prominent surgeons, in this country and abroad, who advocated and practised perineal prostatectomy, thus adding to the perfection of the method.

Suprapubic prostatectomy, first performed by McGill,[41] in 1888, like the perineal method, was first employed in cases of malignant disease, and was at first a partial prostatectomy. Like its predecessor, too, it was variously modified by the different operators who adopted it.

Then followed the combined perineal and suprapubic procedure practised by Fuller[42] in 1892, also variously modified.

This particular period of the development of the surgical treatment of prostatic obstruction furnishes a chapter of surgical history which is enlivened by charges and countercharges in the matter of priority, pretty nearly each item of the technic being the subject of dispute. All this, however, rather strengthened than weakened the position of prostatectomy in the surgical field, the method, by whichever route performed, being destined to play the leading rôle in prostatic surgery to the present time.

Third Stage. The opening of the twentieth century found us possessed of the full anatomical knowledge of the prostate, well on the way toward a more perfect understanding of its pathological possibilities, and in command of all the surgical methods of treatment which the past had brought to us in a fair state of development. Prostatectomy, by one method or another, had so nearly supplanted the other surgical procedures, and was being so widely practised, that McGowan,[43] in 1907, sounded the following note of warning: "The difficulties of the operation have been so minimized, the benefits in many cases so magnified, and imperfect results so glossed over or concealed, by writers of known operative skill, that many who have only a very uncertain idea of the anatomy of the urogenital organs are emboldened to commence operations which they never finish, and the necessity for which is often only problematical. So much bad work of this nature is being done that this very beneficent operation may easily fall into disrepute." Fortunately, this consummation did not ensue. Bad work continued, and continues, to be done, in this field as in all others. But the process of crystallization proceeded, with a steadiness made steadier by the ever increasing knowledge of pathology, the constantly improving methods of diagnosis, and the progressively developing refinement of technic.

Now, after twenty years of this crystallization process, where do we stand today regarding the removal of prostatic obstruction of the vesical neck?

Classification of Cases. Inasmuch as the majority of the cases observed fall within the realm of surgery, meaning, at this stage of development, the removal of the gland insofar as possible, the title of the paper has been made prostatectomy.

Anatomical studies show that the prostate gland develops from fine epithelial outgrowths from the posterior urethra, each outgrowth forming a lobe of the gland, *i.e.*, an anterior, two lateral, a median, and a posterior. The anterior lobe generally atrophies, and the posterior lobe is separated from the median and lateral lobes by a layer of connective tissue which surrounds the ejaculatory ducts

Hypertrophy of the gland begins most often in the middle lobe and involves both middle and lateral lobes. That hypertrophy always begins in the middle lobe is not borne out by observation, for we have all seen lateral lobe enlargements which we have removed, finding no trace of middle lobe involvement.

The frequency with which we remove middle and lateral lobes in one piece indicates a tumor formation, with flattening and atrophy of the surrounding prostatic tissue into a capsule, so that technically the term prostatectomy is not correct, as the entire gland is not removed.[*] I feel, however, that this term should be used as indicating the removal of the fibro-adenomatous mass, immediately differentiating this class of cases from the fibrous prostate and carcinoma.

Judd,[44] in maintaining that prostatectomy is incorrect in the sense of removing the gland, has demonstrated many times that the tissue left behind, and which forms the so-called capsule, is prostatic tissue. The enlargement which is removed in performing the operation is enucleated from the gland in much the same manner that an adenoma is removed from the thyroid or a fibroid tumor from the uterus. While the lesion apparently begins in the so-called median or lateral lobe, he believes that most often the enlargement itself occurs as a single lesion and is not divided into lobes. At least it is certain, he says, that in the transvesical enucleation it will usually be removed in one piece.

In a second group of cases there is a fibrosis of the gland in which the fibro-muscular elements predominate, obliterating the glandular element. In this group of cases a hard, rigid, fibrous ring surrounds the vesical neck. Various gradations will be noted between this class of cases and those included in group four, mentioned later.

A third group includes carcinoma of the prostate, which is usually primary. Carcinoma begins in nearly every case in the posterior lobe, which is not involved in hypertrophy, extends toward the base of the prostate, involves the seminal vesicles, and intervesicular plateau. The lateral and middle lobes become involved early, but posterior extension is retarded by the fascia of Denonvilliers.

In still another group of cases the type of vesical obstruction encountered is due to muscular hypertrophy, hypertrophied mucous membrane usually resulting from chronic inflammation, hypertrophy of the subcervical group of glands or slight middle lobe enlargement, all of which cause an elevation of the vesical outlet, often a bar formation, with no actual change in the prostate.

Infection without hypertrophy and infection with prostatic calculi may in some cases warrant prostatectomy. As stated before, the majority of cases presented fall into the first group, *i.e.*, fibro-adenomatous hypertrophy.

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[*] B. Merrill Ricketts[7] of Cincinnati, in 1902, removed the prostate gland, in its entirety, including the capsule, through a transverse perineal incision in two emergency cases.

Diagnosis. The first and most important step in the handling of a prostatic case is unquestionably the diagnosis of the lesion. This cannot often be made at one examination. These patients most frequently come to us during an exacerbation of an old chronic condition. How long the obstruction has been present, it is often difficult to ascertain, the symptoms are so insidious that they are unrecognized by the patient, the progress is so slow that the advance is not noted until frequency, urgency, failing stream, and often retention, bring the patient to the urologist with the family physician.

The immediate indication is to relieve the urgent symptoms,—and this requires excellent judgment. To suddenly destroy the kidney balance which has been slowly established is a serious problem, and a complete analysis of the situation at once is obviously inconsistent. It is my belief that a patient should be prepared for this examination by slowly relieving the pressure, increasing elimination from the bowels, regulating the diet, and employing urinary antiseptics. When the local and vesical congestion has been sufficiently reduced, a cystoscopic examination is made. The intravesical surface of the prostate, as well as the bladder, should be studied in every case where it is possible to pass an instrument. In this regard I would differ from Braasch,[45] who gives a limited number of indications for the examination. The information gained by the cystoscope is out of all proportion to the possible traumatism which may be inflicted, and the latter should be slight if the above method is followed, and a small instrument (18 F.) is used. Elevating the beak of the cystoscope in its passage by means of a finger in the rectum will often avoid laceration of the mucous membrane over the middle lobe. Delicate manipulation is essential. The presence of stone, foreign body, diverticulum, muscular hypertrophy, inflammation, nerve lesion, and new growth as a concomitant of the prostatic lesion, or as the cause of symptoms, may be discovered. The topography of the prostate is thus studied. Rectal palpation with the bladder empty is essential, and palpation with the cystoscope in position gives a very definite idea of the amount of intervening tissue.

The patient as an individual must be studied, —his medical history, habits, environment, general physical examination, and lastly, his urological condition, must be taken into account in order to give him his just due. When we hear of prostatectomies being arranged for and dates set for operation before the patient is seen, we wonder where the patient comes in.

I was impressed with a recent paper by one of your members, Dr. Quinby, of Boston, on Standardization in Prostatectomy.[46] There is much of value in this excellent contribution which will be useful to the urologist. At the same time we must guard against a tendency to place patients in certain classes, with respect to treatment, which often means an absorption of the personal element into group handling. There must be a classification of cases based on pathology, but the pathology must be general as well as of the local condition. There must be variation in treatment just as there are variations in individuals.

Treatment. Prostatic obstruction is mechanical, in a large majority of cases, progressive, and even under supervision, recurrent. Permanent relief must be attained by a removal of the obstruction. Obstruction to the outflow of urine means retention of toxic products in the body and their absorption; interference with the function of important organs of elimination, the kidneys, and the retention of toxins in the circulation. In the destruction of such a balance, which has been built up slowly, the results are quite as serious as in cardiac decompensation.

How can relief of this condition be accomplished with the least danger to the patient? The diagnosis has been established; stone, tumor, and nerve lesions have been eliminated; the physical condition of the patient reveals no absolute contraindication to operative interference; or reveals a condition which, although contraindicative at the time, is one which will probably become so much improved by relief of absorption from bladder and retention from kidney insufficiency that a complete removal of the obstruction will later be justifiable. The next step is to increase elimination by improving the drainage of the urinary tract.

(*To be continued.*)

BEQUESTS TO HOSPITALS. The will of the late William F. Armstrong of New York bequeathed $25,000 each to the Methodist Episcopal Hospital of Brooklyn and the General Hospital Society of Connecticut, and $10,000 to the Bridgeport, Connecticut, Hospital.

Medical Progress.

PROGRESS IN SURGERY.

By E. H. Risley, M.D., Boston.

DETACHED OMENTAL GRAFTS.

Finton and Put undertook experimental work to determine the fate of detached omental grafts in intestinal surgery. They refer to the work of Freeman, Davis, and others who have used largely attached omentum. The authors find that the free graft has distinct advantages over the attached graft. The piece removed should be on the free border of the great omentum; the latter should not be greatly puckered and cut edges should be covered. The graft must be thin, spread out carefully on the injured part, the cut edge rolled under and held in place by several fine silk sutures. In the absence of infection the graft survives at least six months very little changed. The indications for use are to replace lost portions of peritoneum to reinforce suture lines, to prevent adhesions, to check hemorrhage and to reinforce peritoneum in threatened perforations such as may occur in malignant disease.

NERVE FLAP OPERATIONS.

Strohey goes into great detail in the study of nerve injuries and their repair and pretty definitely demonstrates that the nerve flap as a means of bridging nerve defects is futile. By splitting or cutting a flap from the central portion of the nerve, a definite part of the downcoursing neuraxones are permanently destroyed. Flaps cut from the distal stump deprive the peripheral nerve of a definite portion of its conducting paths also. Experimentally and clinically, it has been shown that nerve flaps do not serve as conducting paths for the downward neuraxones. Nerve flaps, whether central or distal, become merely degenerated partial nerve segments; continuity and union of neuraxones does not take place at the point of suture. The author believes that the nerve flap method to bridge nerve defects should be discarded in peripheral nerve surgery.

Frazier also agrees with Strohey's view and suggests that implantation suture, which is somewhat similar to anastomosis, is a more feasible operation. He quotes Weir, who showed that a gap of from seven to eight cm. could often be made up by nerve stretching which, if carefully done, gives a minimum amount of trauma to the neuraxones. Transposition is another operation which has been found of greatest service. Nerve transplantation has been successfully used by Frazier in the following instances: The nerve sacrificed was the musculocutaneous of the leg and by this means a 7 cm. defect in the musculospiral, a 7 cm. defect in the brachial plexus, a 5 cm. defect in the ulnar, a 14 cm. defect in the ulnar, an 8 cm. defect in the external popliteal, an 8 cm. defect in the median, and a 5 cm. defect in the brachial plexus were bridged over.

The final decision on the superiority of one method over another cannot be written until the Peripheral Nerve Commission, acting under the direction of the Surgeon General, has made its report. It is hoped that much valuable information may be obtained from this report.

TREATMENT OF ACUTE EMPYEMA.

Aschner fairly well summarizes the present day opinion regarding the treatment of acute pyogenic empyema. This opinion is largely the result of the enormous amount of work done on this disease during the influenza epidemics coincident with and following the war. Minor intercostal thoracotomy is undoubtedly the operation of choice. With this operation the patient need not necessarily be removed from his bed; the entrance to the thoracic cavity is made under local anesthesia with blocking of the intercostal nerves. The procedure is preceded by aspiration to determine the lowest point for drainage. An airtight wound is made by introducing a tube or catheter through a trochar opening. Cases may often be hastened in recovering by the use of Dakin's fluid and the suction pump. Further and further study of the acute cases convinces one of the logic of the intercostal procedure. It probably remains true, however, that for chronic cavities with adhesions rib resection is the operation of choice.

CARREL-DAKIN TREATMENT OF ACUTE APPENDICITIS

Rulison publishes a very interesting article on a new treatment of acute appendicitis. He states that severe pain and shock attend the introduction of Dakin fluid into the peritoneal cavity. The use of this antiseptic must, therefore, be restricted to the treatment of the drainage tracts after the period of walling off has occurred. The injections are therefore not intraperitoneal, but intra-abdominal. The author further warns that the satisfactory establishment of a water-tight drainage tract seems to depend, as to its rapidity of formation, upon the type of infection. The structure of the drainage tract in certain severe infections may be very precarious even after a considerable interval. Even in milder infections a minimum of adventitious tissue is often present between adherent coils. Great caution as to time and manner of introducing the fluid is therefore necessary. Accidents involving the integrity of the intra-abdominal drainage tracts, with escape of Dakin fluid into the free peritoneal cavity are attended by grave danger, especially if infection be present. However, with proper precautions, less slough and less foul discharge result from the use of Dakin's fluid. A straight drainage tract is essential. The author has avoided attempting to Dakinize curved or tortuous sinuses as he feels that such attempts are decidedly fraught with danger. He describes and depicts his method in detail. The average time when suppuration ceased and wounds were entirely free of slough and lined with bright red granulations was 10.9 days. Secondary closure of the wound was attempted in five cases and was successful in three and failed in two. Duration of hospital stay in 18 cases was 24.1 days; perfect results, 75 per cent.; weak walls or hernia, 25 per cent.; deaths, 5.5 per cent.

A paper entitled "The Technic of Appendectomy" by Soresi seems to be one of the most valuable contributions to surgical literature for some time. The text is beautifully illustrated by excellent drawings and diagrams, all of which are very clear and much in point. Soresi shows that no matter how changeable are the shape, position, size and relation of the appendix, there is one point which is always fixed. This point is the implantation on the cecum or its base. Therefore in searching for the appendix, especially in the acute case, the surgeon should not look first for the tip, which will generally necessitate the breaking up of valuable protective adhesions, but he should locate the cecum and the base of the appendix, which is much easier and much less dangerous to do. Can the surgeon locate and remove the appendix without breaking the protective adhesions built by the peritoneum, and without spreading infection, no matter what are the condition and location of the appendix? The answer is "Yes," if the technic advocated, which is the opposite of the technic nowadays, is followed. This has, as its foundation, the advice to look for the base and not the tip of the organ, keep away from the peritoneal cavity, do not use protective pads, work always in the open, seeing exactly what you do and how you do it, knowing that it is exactly what you want to do and that it is done as you want it to be done. Soresi divides the right lower quadrant into safetyland and dangerland. Safetyland includes the two external thirds of the cecum with the base of the appendix. Dangerland includes the internal third of the cecum and the general peritoneal cavity. The author never uses the muscle splitting incision, but a generous linear pararectus incision, which brings one down directly over the cecum. When the peritoneum is reached it is freed from adhesions binding it to the cecum, but only on the external side. "We do not for any reason ever touch the external edge of the peritoneum, much less try to free it from any adhesions binding it to the cecum. We keep always outside of the border between safetyland and dangerland: raise up the peritoneum and apply a blunt retractor to the outer edge of the incision, close to its lower angle, and raise up the cecum with a soft sponge holder covered with rubber, applied to its lower external portion." The base of the appendix is surrounded by a purse string suture and severed between clamps and inverted, but the base not tied; for tying and inserting leaves a closed cavity which is very apt to be a source of future danger. It is considered safe to leave in a part of a tip which would be difficult or dangerous to remove, but never a part of the base, which would be a dangerous source of future infection. The author strongly condemns the usual abdominal wound cigarette or tube drainage, which does not really drain uphill or through the early occluded meshes of the gauze, but shows very clearly why stab-wound drainage at a dependent point in the flank by means of paraffin smeared strips of gauze makes the best possible drainage, leaving the abdominal wound to be closed tight, hence obviating the danger of infection here and later possible hernia.

This article is a distinct advance in the treatment of acute appendicitis.

LOCALIZATION OF BRAIN TUMORS.

A marked advance has been made recently in the localization and elimination of central tumors by ventriculography or injection of air into the ventricles and then taking of roentgenograms of the skull. Dandy, of Baltimore, has used this method in over seventy-five cases in Halsted's clinic in the past six months. To introduce air into the ventricles of an adult, it is of course necessary to make an opening in the skull. This can be done under either local or general anesthesia, the choice largely depending on the patient. The author prefers local anesthesia with a responsive patient. The procedure need be but slightly painful and after transferring the patient to the x-ray room his coöperation eliminates respiratory movements and allows of much better exposure. Moreover, a considerable danger of anesthesia is avoided during the time necessary to dress the wound and transfer the patient to the x-ray room. The ventriculogram will in many cases at once tell whether the tumor is central or cerebellar. When there is a difference in the size of the ventricles the tumor is usually on the side of the smallest ventricle. In infants and very young children, a puncture can be made through an open fontanelle or through sutures which have been separated by abnormal pressure. The author states that the so-called unlocalizable tumors comprise at present over half of the total number but by this method a large per cent. of them can be definitely localized. Hydrocephalus is easily demonstrated by ventriculography. Local change in size, shape and position of one or both ventricles, as shown by the ventriculograms will accurately localize most obscure tumors of either central hemispheres. To differentiate between central and cerebellar lesions is frequently one of the most difficult tasks in intracranial localization, but this method at once separates these two groups and indicates the operation of choice. The only cure for brain tumor is extirpation. The results in terms of complete cures of brain tumors will be in proportion to the early localizations which are made. A decompression is a purely palliative procedure and should be adopted only when the tumor cannot be located. Ventriculography permits of an early and accurate localization of the growth when all other methods fail. The method is also useful in precisely localizing the growth. This permits of an exploration directly over the tumor and greatly simplifies the operative procedure. Many useless and harmful operations should be spared the patient by the use of this procedure.

Society Report.

PROCEEDINGS OF THE NEW ENGLAND BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION.

THE thirty-third meeting of the Society was held on January 28, 1920, in the Warren Hotel in Worcester, at 7.45 P.M. The members of the Worcester District Medical Society were invited and a number of them were present. Dr. O'Neil presided. At the business meeting, the following men were elected to membership:

Dr. Walter D. Bieberbach, Worcester.
Dr. Ira N. Kilburn, Springfield.
Dr. Cyril I. Richards, Boston.
Dr. George A. Wilkins, Revere.

The scientific program consisted of demonstrations of specimens and reports of cases. The paper of the evening was by Dr. Henry G. Bugbee, of New York, on "Prostatectomy."

A report of the meeting follows:

DR. BARNEY: I have an interesting case to report briefly.

This is a specimen of a kidney which I removed from a woman 46 years of age. She entered the hospital on the medical service. Family history and past history negative except for slight hematuria five or six months ago. Since then there have been occasional attacks. About a month ago she began to have intense pain in the back, a sense of weakness, and night sweats. Frequency of urination, three or four times a day. No nocturia. She was running a moderate temperature. Examination showed an obese, rather sick looking woman with a markedly pendulous and fat abdomen. Owing to this abdominal examination was difficult, but an indefinite moderately large, tender and movable mass was felt in the left flank. X-ray showed no calculus. Cystoscopy showed a normal bladder and both ureters were easily catheterized. The left urine showed pus and colon bacilli; right urine negative. Bladder urine had shown a little blood. Pyelogram unsatisfactory owing to the large abdomen, but x-ray and clinical examination showed a high diaphragm on the left. Wassermann negative. We made a diagnosis of pyonephrosis due to colon infection. At operation there was an extensive perinephritic abscess, the kidney being pushed forward and evidently badly infected. As the patient was then in bad shape nothing further was done at the time. Recovery from this operation was good. Ten days later I did a nephrectomy. Convalescence was good.

The kidney is of interest in that it shows various areas of hypernephroma. The rest of the organ is necrotic and sections show bacilli and cocci in the kidney tubules. It is a most unusual manifestation of a malignant disease of the kidney.

Dr. W. C. Quinby:

A Case of Long Standing Urinary Tuberculosis Resulting in Autonephrectomy with no Symptoms at the Level of the Kidney, but with Severe Bladder Involvement.

A woman, aged 42, single, bookkeeper, entered the Peter Bent Brigham Hospital 11-x-17, complaining of urgent, frequent urination. Family history negative; no tuberculosis in any member of the family. Past history: Has been very well in general, except that she is said to have had pneumonia at 11. During her adult life has had an attack of tonsillitis every two or three years. Also has rather severe headaches at times, frequently associated with the catamenia. Her weight is 139 pounds, which is as much as she has ever weighed.

Present illness: About twenty-two years ago, after a fall on the ice, began to have urgent, frequent urination. For two years there was no treatment, and then on examination patient was told that she had a uterine displacement. During the following two years her condition grew worse until she gave up work eighteen years ago. She was seen by Dr. Garceau on March 25, 1904, who found the patient was suffering from tuberculosis of the bladder. This organ was much contracted, holding only 60 cc. and there were ulcerations found, especially around the left ureteric orifice. Tubercles were also seen throughout the rest of the mucous surface, and there was no difficulty in isolating the tubercle bacilli. The patient was suffering a great deal, and was entirely incapacitated from doing anything in the way of work. Dr. Garceau's opinion was that it was not impossible that the kidney might be badly damaged, and yet give no symptoms of any degree. Still, he was inclined to think that the kidney was a good one because the amount of pus coming from the bladder as a whole was not in excess of the lesions in it. A month later Dr. Garceau made a vesico-vaginal fistula and at the same time examined the kidneys. He found that the right one was doing good work, but that there was no urine coming from the left side at all. The bladder was filled with tuberculous ulcers. In regard to the kidneys, he felt that there was either no kidney on the left, or else that it had been destroyed by a slow suppuration. Patient continued to bear the vesico-vaginal fistula for two years. During this time she washed bladder out herself. At the end of this period the fistula was closed and the bladder was dilated about twice each week for six months. Then about once a week. Its capacity at the end of this time was about 180 cc. Patient's general condition then remained entirely satisfactory for the next seven years, that is, until five years ago, when similar symptoms recurred, and the bladder was found again contracted. For eight or nine months dilatation was employed with much improvement, and she considered herself entirely well until March, 1917. Then the bladder began again to misbehave. At this time, there had been a recent attack of tonsillitis. During the past six months the condition of the bladder has become steadily worse, until at present she must urinate every 15 or 30 minutes during the daytime, and frequently at night. There has been throughout the whole course of the patient's illness no pain or discomfort in the region of either loin. Examination at this time showed no evidence of disease in heart, lungs, or abdomen. The pelvic examination was normal. On the 12-x, the patient was examined by cystoscope under spinal anesthesia. This shows in the first place a markedly contracted bladder. If more than 100 cc. is introduced there is definite bleeding. Examination of the mucosa showed several superficial ulcerations especially confined to the region of the base and trigone. The right ureteric orifice was found in this hyperemic area after some search. Continued observation over a considerable period of time was entirely unsuccessful in demonstrating any trace of the left orifice. The right orifice was catheterized for the normal distance and an injection of phenolphthalein made. This was continued for one hour and during this time 21% of phthalein was put out. The microscopic examination of urine from this kidney was negative except for appearance of an occasional red blood cell. After the period during which phthalein had been collected an injection was made into the muscles with indigo carmine. This appeared in the urine in 20 min. and the bladder was again observed over a period of one-half hour in an endeavor to demonstrate possible efflux of blue from the missing left orifice. No trace of any could be found, however. A specimen of urine has been sedimented and injected into a guinea pig. Patient is discharged on the 13th of October with the advice to have her bladder treated systematically until we are in possession of the report from the pig.

Special Note. October 12, 1917: From studying this patient my opinion is that she in all probability has had a T.B. of the left kidney which has progressed slowly and without symptoms referable to this organ. During this process the ureter has become occluded. The other alternative is that the left kidney is absent congenitally, but we know from autopsy records that any absence of a kidney is exceedingly rare. It is of great interest that the drainage of the bladder by vagina was able to bring about a remission of the T.B. in the bladder, as is evident from previous history. Also it is of interest that the patient was able to tolerate the conditions established by such an operation so well. She is very intelligent and was carefully trained by Dr. Gareeau to wear an especially fitted urinal which was boiled twice daily. Furthermore, she was trained to wash and medicate her own bladder as the occasion demanded. For this she used a catheter in the most approved sterile fashion, and also put on sterile gloves for introducing the instrument. The question which is not yet clear in my mind is that of the cause of the present difficulty. Is it to be supposed that the left ureter has become slightly patent on some occasion and allowed T. B. to reinfect the bladder which had been entirely free? Or must we assume that the bladder was never entirely healed and that as a sequence of her attack of grippe last March a latent focus of T. B. has been lightened up again. Further observation is to be much desired.

Two guinea pigs injected, negative for tuberculosis one month later. Urine at this time showed: sp. gr. 1016; albumen, a trace; no sugar; by microscope considerable debris and a marked amount of pus cells.

Reëntry: 4-i-18. Examination essentially same as before. It has not been possible by local measures to control the frequent urination, and other evidence of cystitis of which patient complains. She enters hospital therefore for exploration of the left kidney region under supposition that she has here a kidney which has probably been occluded by an old tuberculous process, but which occasionally serves to light up the tuberculous involvement of the bladder. Operation was undertaken on the following day, and an enlarged kidney 13.5 x 8.5 x 5 cm. was removed. Its surface was roughened and the perirenal tissues were found to be the seat of dense adhesions. The color was pale yellowish pink. There was distinct lobulation which on section corresponds to pockets within the kidney capsule, filled by soft caseous material. There was no trace of any normal kidney tissue to be found and the ureter was occluded. The patient was discharged after a normal convalescence on the 15-i-18, 11 days after operation.

Reëntry: 20-i-1920. During the past two years patient has been under observation and has at no time been free from bladder discomfort, together with frequent urination. Though never absent this discomfort has occasionally assumed increased proportions, and at each time she has been able to work only with great difficulty. Treatment has been by instillation either by iodoform, glycerine, olive oil, or carbolic acid. The bladder capacity is about 200 cc. when it is quiescent, but when it is giving much trouble this capacity diminishes markedly, so that it is only about 50 cc. The urine is sparkling, but on examination by microscope shows only an occasional white blood cell. Cystoscope does not show any evidence of ulcers remaining, but in the upper left vault there is a marked puckering and drawing together of the bladder by old scar. All local measures having been exhausted, the patient was operated on on the 23-i-20. Through a midline incision over the symphysis the prevesical space was opened. There were found here marked adhesions, and dense induration of the fat, firmly binding the vault of the bladder to the peritoneum. The peritoneal cavity was opened and the pelvic contents found to be normal in every way. Incision of the bladder at one side of the most scarred area showed its wall in this situation to be hardly thicker than 2 mm., and to be converted almost entirely into fibrous tissue, covered by a layer of mucosa. An attempt was made to resect this scarred area where the bladder was much more thickened, but this was successful only in part because of the very limited capacity of the organ. The whole bladder was mobilized as well as could be, extra-peritoneally, and the wound resulting from the excision was united around a large tube.

DR. PHELPS: I wish to show a few specimens and a few cases.

First: Here are six stones which I removed from the bladder of a man 58 years old who had presented no symptom whatever, until within six weeks before he came under my care. He had passed bloody urine at intervals and noticed that the stream stopped. I made the diagnosis by cystoscopy and counted four stones. I got six at operation.

The other specimen is that of a tuberculous kidney which was removed at Harvard Private Hospital.

New Case Report: There seem to be a number of cases of papilloma of the bladder at the present time.

I wish to report and show the first case, that of R. T., a man 41 years of age, who had been treated by medical men for five months before he came to me. His chief complaint was that of blood in the urine.

Cystoscopic examination showed papilloma of the bladder, situated above and a little to the inner side of the left orifice, cauliflower-like in appearance and easily movable. He has been fulgurated by the D'Arsonval current eight times and at the last examination only the scar was discernible. He has now been five months without any hematuria.

The other cases were prostatectomies.

C. M. Age, 79. Two-stage suprapubic prostatectomy. A very hard prostate to remove. He has great relief from symptoms, is able to be about and is working at odd jobs. Has some lack of control of urine.

Mr. L. W. C. Age, 55. Two-stage prostatectomy. Is doing well. Done at Worcester City Hospital. Is helping about wards and is a grateful, happy patient.

Mr. E. L. Age, 86. An old gentleman who came from Sweden. He had been in the hospital three different times and was passed up as a poor operative risk. Perineal prostatectomy was done in his case and the results have been most gratifying. He is about his home and says he feels fine.

Mr. A. M. T. Age, 75 years. Also a two-stage prostatectomy. When I first saw this man he was complaining of lack of control of his urine. I removed two quarts of urine from his bladder. His kidney function was 18%. Under treatment which consisted of catheterization, his kidney function came up and he seemed to be a fair operative risk. It is nine months since his operation and he has withstood it nicely. He is about his home and does carpentry and odd jobs, and attends meetings of his secret societies with joy and comfort.

Gas oxygen was used in all these cases.

Dr. Cook: An unusual case of periurethral abscess. Infection of the abdominal wall. This man had a stricture for fifteen years. Nine days ago he went to a surgeon in Providence. His temperature was 104°. He complained of chills and sweats. He passed water without difficulty. He was referred to a medical man who thought he might have typhoid fever. Upon examination of the perineum a mass the size of a hen's egg was found and there was a cellulitis which extended across the abdomen. I saw him in the afternoon and sent him to the hospital. The following morning I made an incision in the perineum and an incision above the pubes and got out a considerable amount of pus. The infection continued to spread and two days later I opened him and found pus had spread away around to the spine on the right side. It was necessary to make several incisions to get out a quart of pus. The man is now practically healed.

"Prostatectomy," Dr. Henry G. Bugbee, New York.*

DISCUSSION OF DR. BUGBEE'S PAPER.

Dr. Chute: I have been very much interested in the paper which we have just heard. There are some things, however, with which I do not wholly agree, though for the main part I agree most heartily. In reference to making cystoscopic examinations routinely on all prostatic cases, I think a sufficiently correct diagnosis can in most cases be made without the use of the cystoscope. There is the not inconsiderable danger of infecting a non-infected bladder and also the danger of traumatism from the passage of a cystoscope. The cystoscope helps us principally in recognizing a diverticulum of the bladder. It is not a great help in recognizing the cases of retention of spinal origin. It may be of help in determining the cases of the small fibrous prostate. If one is to do all his operations by the perirenal route, it may be important that he do a cystoscopic examination on his patients; if one does his operations suprapubically and especially if he does two-stage operations, the cystoscope can show him nothing that he may not easily find out at the time of his preliminary operation. While I recognize the importance of cystoscopic examination in certain cases of prostatic origin, I do not believe that it is a maneuver which should be carried out routinely in these cases.

Also I do not agree with Dr. Bugbee about the danger in removing suddenly the back pressure on the kidneys that arises from an over-distended bladder. I have not the slightest compunction about opening these distended bladders, which I do very frequently. I do watch these cases carefully after opening their bladders, which I always do under local anesthesia. I believe that it is extremely essential that this be done under a local anesthesia rather than an inhalation anesthesia. If the urine in these cases diminishes, I give these patients salt solution under the skin, 500 to 750 cc. two or three times a day for a week or even ten days, if it is necessary. I believe in this way that we can almost always control the tendency that these kidneys may have to shut down. I think it was Dr. George Smith who supplied me a probable reason for the action that I had so often seen large amounts of salt solution produce on these kidneys, that have been affected by back pressure. The explanation is that kidneys that have been embarrassed by back pressure cannot extract waste products from a concentrated blood; that if, however, the blood is very dilute, they will often work perfectly well. You can, in a way, compare it to the man who is suffering from gastritis. While he cannot take his nourishment from concentrated foods liked corned beef and cabbage, he is perfectly able to take a sufficient amount of milk and lime water to give him the same amount of nourishment. I feel that the large suprapubic tube is an advantage in that there is less chance of it being stopped with blood clots. You have less chance of intermittent drainage and likewise a better approach to the prostate for your second operation, the prostatic enucleation, and you are less likely to open up the layers of the abdominal wall in your manipulation in the removal of the gland.

I practically never use the Hagner bag. I use what I believe is a simpler process for the control of hemorrhage. After the enucleation of the gland, I place a good sized soft rubber catheter in the urethra. If there is any tendency to bleeding, I pack the bladder outlet tightly against this catheter and hold it for a time. As I almost invariably do my prostatic enucleations under spinal anesthesia, I can take any time within reason to control the hemorrhage. If the hemorrhage stops satisfactorily, I take out my packing and put in a suprapubic tube. If after replacing my packing a few times, there is still more bleeding than I feel is safe, I pack in one, two or three gauzes about the bladder outlet and leave them from 24 to 72 hours. I have seen slight secondary hemorrhage following the removal of this packing but it is very rare indeed. I wish to compliment the reader on his paper, which I have enjoyed very much.

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* See Journal, page 41

DR. BARNEY: I agree with Dr. Chute that the cystoscope is becoming less and less important. There are some advantages to be gained for the surgeon but it is a disadvantage for the patient.

I use the Hagner bag very much less than I used to. There is so much less hemorrhage in the secondary operation that it is only occasionally required.

I want to say a few words in commendation of the perineal operation which I know still has a black eye, but which I have tried out for my own satisfaction. I have done about one hundred such cases and have lost only two or three that I can recall. I am sure, in my own experience, the results have been very promising. In a certain type of case it is a very satisfactory operation. It can be done under a small dose of spinal anesthesia and there is much less hemorrhage. It has, however, certain drawbacks and it is necessary to know the anatomy of the perineum. Where care is taken it is an excellent operation and in my hands there have been good results and no evil consequences.

DR. HORACE BINNEY: I wish, Mr. Chairman, to express the pleasure it has given me to hear Dr. Bugbee's most scholarly and interesting paper.

I feel, from personal experience, that I must stand up with Dr. Bugbee in support of the cystoscope in the diagnosis of these prostatic conditions. In one of my cases of prostatic hypertrophy, a careful cystoscopy was not done, the enlargement of the gland seeming to account for all the symptoms. A perineal prostatectomy was performed, and all was well until two days later the patient began to have very severe and frequent spasms of the bladder, which could not be controlled by morphia. Feeling that suprapubic drainage was the only remaining means of relief, I operated again, and in exploring the open bladder with my finger, I found the opening of a large diverticulum. The insertion of a tube, and drainage of the diverticulum, gave complete relief. The exhaustion due to the spasms and second operation made a slow convalescence, but the patient was out of bed and apparently recovered when, to my surprise, he died suddenly from a pulmonary embolus. I have always felt that a careful cystoscopy might have prevented this outcome.

Cystoscopy in the old days, with a large instrument was often very painful. Today, with a small calibre instrument, it may be almost painless; the one I use is a Wappler measuring No. 17 French.

Again, I want to voice my staunch support of the cystoscope.

DR. QUINBY: I wish to emphasize the large amount of investigation and reading represented in the historical part of Dr. Bugbee's paper. I assure you that his résumé is very accurate, interesting, and valuable.

I quite agree, in general, with the operative measures for the prostatic hypertrophy and the details in regard to them which Dr. Bugbee has advocated.

I agree with him, and disagree with Dr. Chute, in regard to the use of the cystoscope. I feel that in every instance we should know exactly what we are about, before we operate on our fellow-man. It is in just this point that urology excels other branches of surgery. The urologist can know just what he is going to do and going to find before he operates; the general surgeon, on the other hand, must often do an "exploratory operation." It is, therefore, a mistake to teach that one should not investigate every patient to whatever extent is possible, in order to reach a proper diagnosis. When correctly used, I have never seen the cystoscope cause any harm to the patient.

My ideas in regard to the suprapubic operation in two stages I have already expressed in the paper to which Dr. Bugbee has referred. Also in regard to the control of hemorrhage, I think that we are pretty much in agreement at present.

DR. O'NEIL: I want to add my thanks and appreciation to those of the others to Dr. Bugbee for coming to us and reading his extremely interesting paper.

A good many points which I would like to talk about have already been discussed by some of the other men.

In regard to whether or not a routine cystoscopic examination should be made in cases of prostatic obstruction it seems to me it is a matter entirely of the type of case and dependent upon the skill and experience of the operator.

In many cases, in my opinion, it is unnecessary, and in some I think it may be harmful. I should say that those cases absolutely requiring it are in the minority.

In regard to the functional test it has always seemed to me it is not so necessary that we should have a high output, but that it should be steady. We have frequent cases with a comparatively low phthalein output but which was uniform, go perfectly satisfactorily through a two-stage prostatectomy.

I am strongly influenced in my judgment by the patient's general condition, a clean tongue, lack of digestive symptoms, and a good urinary output, from 60 to 70 ounces a day.

In regard to the use of the Hagner bag, I have found it a good friend, particularly in the one-stage operation. In the two-stage operation where the prostatic congestion has been relieved by drainage, the likelihood of bleeding is considerably less.

I think the employment of the large self-retaining catheter for suprapubic drainage instead of a large tube, possesses definite advantages in that the patient can be kept dry and the wound heals more readily. In cases where there is hemorrhage a larger tube, of course, is superior.

Dr. Bellisle: In three G. U. hospitals in France, no prostatectomy is performed unless the patient is cystoscoped. The wound is always packed and drainage through the bladder is always established.

Dr. Bugbee: In regard to cystoscopic examination, I feel that it involves a personal element. I have often had patients come to me and almost beg that I should not cystoscope them because following a previous examination they had been laid up in bed for two weeks. We use a small cystoscope, and it is very seldom that we cause pain or have bleeding after such examinations. A small instrument can be inserted easily, and unquestionably much valuable information obtained.

I can recall two patients, under the care of excellent urologists for a period of two years being treated without a cystoscopic examination for a prostatic growth. Both had vesical calculi.

In speaking of this technique of prostatectomy as I have tonight, I feel that if we can save a patient anything, we ought to. So in every detail of handling these prostate cases, it is a question of what we can do in each individual case. When we have low mortalities then we are getting down to the comfort of the patients. When a Pezzer catheter is used for preliminary suprapubic drainage there is no leakage around the tube and the patient is more comfortable than with a large tube.

Dr. Keefe: I wish particularly to bring your attention to the necessity for careful preliminary examination and treatment. Too often we find that the specialist confines his activities to the organs that come directly within the scope of his specialty, which, of necessity, has a tendency to restrict his vision. We all realize that specialism has advanced our knowledge of medicine, and yet we should guard against the phases of this very specialism, that may be harmful.

There is a separate problem in each case that comes to us for study and treatment, which makes it essential that we view the body as a whole, and apply the knowledge we have gained in general medicine and add to it the special skill we have acquired in our specialty.

The patient, in his desire to have the operation soon over, is prone to persuade the surgeon to operate, perhaps the next day after entering the hospital, and before an adequate examination can be made, occasionally to the detriment of the patient.

A large number of patients suffering from an enlarged prostate may be readily cystoscoped, while others present insurmountable difficulties, even to an expert cystoscopist.

There is good reason to believe that considerable injury may be caused by attempts at cystoscopy, in these latter cases, therefore, I agree with Dr. Chute that it is unwise to cystoscope in every case, where we are dealing with an enlarged prostate. I prefer the two-stage suprapubic operation, in the very large majority of cases, and yet would employ the perineal route in certain cases, because with an accurate knowledge of the perineum, the operator can see and have each stage of the operation under his command.

We should not limit ourselves to the universal use of any one method, but should employ the operation best suited to the case in hand.

The incision into the bladder, made during the first stage of the suprapubic operation for prostatectomy, should be made large enough to allow the entrance of the finger, to explore the bladder for stones or diverticula, as well as to obtain a knowledge of the position, size and extent of the prostatic enlargement.

The value of the suprapubic drainage is shown not only in the marked improvement in the general condition of the patient, but in the diminished size of the prostate found at the second stage of the operation.

The case report by Dr. Barney, where the kidney was removed for marked disease and yet the patient never complained of pain over the kidney, is somewhat analagous to a man who was sent to me by his physician, as a case of cancer of the stomach.

He was a man about sixty and had lost in weight forty pounds during the past three months. He said in reply to questions, that he had no pain or frequency in urinating, that the urinary apparatus was all right, but that he had vomited everything taken by mouth during the last three weeks and he thought all the trouble was in his stomach. When I placed my hand on his abdomen, I felt a mass which was dull on percussion, reaching from the pubes to the umbilicus. I asked him when he had passed water and he said about an hour ago. I passed a catheter, and withdrew three pints of urine, with no ill effect to the patient. I have never witnessed any harm to the patient by withdrawing large quantities of urine from the bladder; symptoms of shock undoubtedly have happened, because some have noted it, but the occurrence must be rare. The prostate was ex amined and found markedly enlarged. The patient was catheterized for five days, and never vomited after the first catheterization. A two-stage suprapubic removal of the prostate was done, and the patient regained thirty pounds in three months.

Book Reviews.

Genito-Urinary Diseases. American Medical Association, Chicago: American Medical Association Press. 1919.

The transactions of the Section on Genito-urinary Diseases of the American Medical Association at the sixty-ninth annual session held in Chicago in June, 1918, have recently been published. One of the most interesting articles in the volume is an address by Edward L. Keyes, Jr., on "Present Status of the Urology of War." The author has reviewed the situation as he has found it in France, stating that at the front, the wounds of the urinary organs inevitably fall to the care of the general surgeon, as there is no genito-urinary surgery as such. He describes the wounds most likely to be inflicted under war conditions on the kidney, the ureter, the bladder, the urethra, and prostate, the external genitals and anterior urethra, and comments upon the effect which the results obtained by the primary suture of wounds will probably have on the future status of urology.

A second article of interest is "Venereal Disease in the Thirty-Ninth Division," by Loyd Thompson and J. R. Bolasny, who discuss the public measures taken to diminish temptation and suppress prostitution and the personal prophylactic measures adopted by the Army. The medical treatment employed is outlined in detail. Abstracts of discussion of this topic are of especial interest.

In a paper discussing "Some Cases of Retention of Urine, Associated with Defects of the Sacrum, Probable Spina Bifida Occulta," Arthur L. Chute has cited the histories of several cases and described the effects of operations.

In an article presenting his observations on "Acute Colon Bacillus Infection of the Urinary Tract," J. Dellinger Barney discusses the possible existing causes, natural and artificial immunization, symptoms, and methods of treatment.

This volume contains many other papers, many of which are illustrated by plates, which merit the attention of the profession.

Compendium of Local Diagnosis of the Brain and Spinal Cord. By ROBERT BING, Professor at the University of Basel. Fourth Revised Edition. Berlin and Vienna: Urban and Schwarzenberg. 1919.

This fourth edition of Bing's well-known introduction to the clinical localization of the diseases and injuries of the nerve centres is the second which has appeared since the beginning of the great war. In his preface to the third edition, the author commented on the great mass of new material especially with reference to the cerebellum and to disturbances of vision, produced by war conditions. In the present edition this material is even more fully elaborated and is enriched by the review of contributions to military neurology from all of the belligerent nations. Originally designed for the benefit of civilian practitioners, the book has been developed for the special purposes of military surgeons and neurologists. It is illustrated by 97 text-cuts, many of them in several colors.

Principles and Practice of Infant Feeding. By JULIUS H. HESS, M.D., Major M. R. C., U. S. Army, Active Service. Professor and Head of the Department of Pediatrics, University of Illinois College of Medicine; Chief of Pediatric Staff, Cook County Hospital; Attending Pediatrician to Cook County, Michael Reese, and Englewood Hospitals, Chicago. Illustrated. Philadelphia: F. A. Davis Company, Publishers. English Depot, Stanley Phillips, London. 1916.

This little book from Chicago is very readable and full of good sense. The author is evidently a good practitioner as well as teacher. The book is exceptionally good regarding breast feeding and everything connected with it. We wish that it agreed as well with our beliefs as to artificial feeding. The author advocates the use of dilutions of whole milk with the addition of carbohydrates. He regulates the amount of milk to be given by the baby's weight. In our opinion he begins the administration of broths and vegetables too early. He follows the classification and ideas of the German school in his discussion of the diseases of the digestive tract except as regards the intestinal infections. He follows the teachings of the Boston schools concerning them until he comes to treatment, when he throws them all over. The book closes with an appendix on Proprietary Foods, the preparation of foods for babies and some general remarks as to the care and development of babies and young children.

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THE NURSING PROBLEM.

The shortage of pupil nurses that has been threatening for some years has now become acute. When the financial crash comes, that some predict for the near future, and when the factories not only no longer offer extraordinary wages but begin to shut down, it may be that many young women who now find in nursing no pecuniary attraction will again turn towards it as a livelihood. There is, however, no certainty either when this business stagnation will occur or that it will turn young women towards the nursing profession. In the meantime what can be done by the training schools to attract more applicants?

The main causes for the country-wide turning away of young women from nursing seem to be:

1. Other more remunerative occupations, both immediate and prospective;
2. Dissatisfaction of graduate nurses in actual service;
3. Shorter and far pleasanter preparatory courses for other employments.

These causes and whatever others can be discovered must be studied and, if possible, eliminated. For within the last half century, just as the hospitals have become dependent upon an ample stream of incoming pupil nurses, so for the medical profession, and indeed for the whole community, trained nurses have become indispensable. The present shortage of probationers foreshadows a public calamity in the near future.

With the first two causes the schools are not especially concerned. They might, however, do more than they now do for their graduates. They might, for instance, provide and maintain Homes for them at moderate cost when they come back from their cases, perhaps sick themselves or only exhausted. They might also help them to shorter hours and to larger wages and salaries by calling sympathetic attention to the fact that nurses' charges have not increased anything like the cost of living or wages in other employments.

It is the third cause of the present shortage, and the possibility of making the course of training shorter and more attractive, that should receive most earnest consideration.

In the first place we must see to it that in any changes proposed there shall be no lowering of present standards. To maintain these standards it may not be possible to shorten the course of training. But may it not be possible to divide the course into separate branches, and, as the pupil nurses complete them satisfactorily, to give certificates of fitness in these different branches? With such certificates the pupils nurses could be recommended for service in whatever branches they have qualified. They could thus find remunerative employment, after say one year of preparation. And then, if they so desire, they could afterwards at any time return for additional training in other branches and for extra certificates which will give them wider fields of service and still higher remuneration.

After winning certificates in all the different branches then they might be given the diploma of the school, which would also continue to be given to pupils who complete the regular course without interruption.

These different branches, for which separate certificates might be given are:

1. *Domestic Science*, including what is now usually given in the preparatory course (four months).
2. *General Nursing*, in medical wards (eight months).
3. *Maternity and Infant Nursing* (four months).
4. *Contagious Nursing* (four months).
5. *Home Nursing*, including Visiting Nursing (four months).
6. *Public Health Service*, including School Visiting and Industrial Nursing (four months).
7. *Surgical Nursing*, including Operating Room Service (six months).
8. *Head Nurseships*, or Hospital Senior Service (six months).

Were these tentative periods adopted, forty months would be necessary for their completion, which, with the allowance of interruptions, would not more than offset the advantage both to the schools and to the pupil nurses of the usual uninterrupted course of thirty-six months.

Young women who have made definite choice of a nursing career will naturally take the regular course of training. The far larger number, however, who are not so decided, but who look forward rather to early marriages and homes of their own, or who want as soon as possible to earn money for themselves or their families in work where their hearts as well as their hands shall be employed, will be likely to prefer the shorter training offered in the special branches and the much earlier opportunities for earning good wages.

In this scheme there might well be considerable choice of the order in which the different branches may be taken. The first two branches, of course, would have to be taken first, and the two last in the list would have to be taken last. By no means all of those who would take this proposed divided training may be expected to complete the series. Some, for example, will be glad to escape the course of training in contagious nursing, even if by winning a certificate in that branch they could command higher wages. And some will prefer maternity and infant nursing, while others will avoid it. But for all who take the training and win their certificates in any branch there will always be both the chance afterwards of climbing the ladder towards a complete education with all the privileges carried by a full diploma, and also the chance of early earnings in an ascending scale. Whatever wages may be fixed as proper for certified nurses in the intervals between their courses of training, while taking further training in other branches these wages should be halved. And, furthermore, these reduced earnings ought to be equally divided between them and their nurse teachers, the pupil nurses thus by their earnings paying for their instruction.

Young women who now cannot possibly afford to take the training might by this plan easily do so. Moreover, many who hesitate to promise in their application papers to remain throughout the course, provided they are accepted as probationers, would willingly enter for one year.

The adoption of this plan by our existing training schools would obviate the necessity of creating separate schools for "attendant nurses," which at best could give only a smattering nursing education instead of a solid foundation for subsequent training. And, besides, during the first year, under this plan, the pupil nurses would be of great use, instead of a disturbing element, in the hospitals.

There can be no doubt of the great usefulness to the community of nurses who have had only one year of training. Their certificates would specify just what kind of nursing they are fitted for, which is a large proportion of what is needed. Their schools might well furnish them and the public with nursing registry service, including such extra oversight as would be advantageous and would ensure that only those who do well would be eligible for further training in what may rightly be considered the nursing specialties.

The "certified pupil nurse," whose training has been only interrupted, would be on a better footing than the "attendant nurse" whose training has been admittedly inferior. Whatever provisions might be made for the subsequent further training of "attendant nurses," it is not likely that many would avail themselves of such privileges. And we should thus have two distinct classes of nurses. This would be a great disadvantage. In every other profession we have only students and graduates. Why have any other classification among nurses?

There would be other large economic advantages in the general adoption of this plan besides the benefits of it to the pupil nurses. The facilities of the training schools would be fully utilized. The hospitals would be relieved of their present embarrassment. And families who cannot afford to pay for fully trained nurses, when as usually happens such are really not needed, would have all the nursing that is needed at half the cost of graduates' service.

But it is not enough to arrange shorter courses. If we want more nurses we must make the conditions of pupil nurse service more attractive. Separate chambers must be provided, so that each pupil shall have her own. Better food must be given to them by the hospitals. They must have shorter hours of service. More recreation must be provided, and parlors where the girls can receive their visitors. In short, the living conditions of the pupil nurses must be humanized.

This scheme of separate branches of nurse training is no new invention. Practically it is that of the White Cross of Holland, where it has worked well. Why not try it in this country? Alfred Worcester, M.D.

DISEASES UNDER THE WORKMEN'S COMPENSATION ACT.

The Supreme Judicial Court of Massachusetts, in a far-reaching decision just handed down in Pimental's Case, states that the Workmen's Compensation Act does not cover any disease arising out of and in the course of employment. This decision, coming like a bolt of lightning out of a clear sky, in the face of a number of decisions the other way, has caused little less than a sensation in the ranks of employees and their physicians; and even insurance companies were not a little surprised at the scope and tenor of the decision.

The Court went far afield in deciding that no case of disease was included within the scope of the compensation statute. It had been previously decided, in broad and liberal decisions by the same judicial body, that lead-poisoning, optic neuritis, heart disease accelerated by injury, pneumonia, insanity following injury, acceleration of preëxisting syphilis, and other like disease conditions resulting from personal injury arising out of employment, were covered by the Act. In Brightman's Case, 220 Mass. 17, the Court said: "Acceleration of previously existing heart disease to a mortal end *sooner* than otherwise it would have come is an injury within the meaning of the Workmen's Compensation Act." In Hurle's Case, 217 Mass. 223 (optic neuritis case), the Court said: "The difference between the English and Massachusetts acts in the omission of the words 'by accident' from our act, which occur in the English act as characterizing personal injuries, is significant that the element of accident was not intended to be imported into our act. The noxious vapors which caused the bodily harm in this (Hurle's) case were the direct production of the employer." In Johnson's Case, 217 Mass., 388, the Court said: "Under the act, 'personal injury' is not limited to injuries caused by external violence, physical force, or as the result of accident in the sense in which that word is commonly used and understood, but under the statute is to be given a much broader and more liberal meaning, and includes any bodily injury. Aside from the decisions under the English Act, which provides for 'personal injuries by accident,' *it is clear that 'personal injury' under our act includes any injury or disease which arises out of and in the course of the employment,* which causes incapacity for work and thereby impairs the ability of the employee for earning wages."

Notwithstanding these and other similar decisions, and particularly the language used in Johnson's case, above, the Court states, in Pimental's Case, just decided: "If it could be held that the employee was suffering from an occupational disease, still the Workmen's Compensation Act does not in terms include disease. It cannot be held to cover disease contracted by employees in the course of and arising out of their employment. Pain is not disease, nor is disease resulting in pain a personal injury."

Had the Court confined its decision to the case under consideration, that of a cigar-maker whom the impartial expert who examined him said was suffering from neuralgic pain due to faulty posture and malformation of the thoracic bone cage plus the loading upon this region incident to the muscular action in rolling cigars for a number of years, there would be no cause for alarm. But when the Court goes far afield and sets down the broad principle that not only was this case outside the law, but that no disease contracted by employees in the course of and arising out of their employment, over-ruling all previous decisions to the contrary in one bold paragraph, it is time for the medical profession of this state to get together and see that the law is amended and clarified to again place within its scope such disease cases as properly belong to and are chargeable against industry.

It is evident that insurance companies will now fight every claim under the Workmen's Compensation Act in which an employee suffering from a disease resulting from or aggravated by a personal injury arising out of his employment is concerned; and this means that not only will compensation payments be disputed but bills of physicians and hospitals as well.

The medical profession should make its tremendous influence felt in cases such as this, in which not only their own interests are involved, but the interests of their patients, the working people of the Commonwealth also are at stake.

Health and sickness insurance with an additional heavy charge on industry and further interference with the rights of practitioners by another state board, is sure to result unless there is restored to the Workmen's Compensation Act all disease cases arising out of and in the course of the employment. An amendment adding after the words "personal injury" the words, "or disease," so that the law as amended will read: "Compensation shall be paid to an employee who receives a personal injury or disease arising out of and in the course of his employment," will restore the Act to its past effectiveness and leave it safe from any possibility of danger by further action by the Courts.

Prompt, concerted action is demanded.

ELECTION OF A PHYSICIAN TO THE HALL OF FAME.

In a letter published in another column of this issue of the Journal, attention has been called to the fact that hitherto no physician or surgeon has been recognized as worthy of a place in the Hall of Fame. For this distinction, Dr. S. Adolphus Knopf has suggested the names of three physicians, William T. G. Morton, Ephraim McDowell, and J. Marion Sims. The proposal of the name of Dr. Morton has aroused some objections, on the ground that he was not the discoverer of surgical anesthesia. In support of Dr. Morton's claim we are glad to quote the following extracts from a letter submitted to the Senate of the University of New York by Dr. J. Collins Warren, Moseley Professor of Surgery Emeritus, Harvard University:

"I understand that medicine has thus far received no representative in the Hall of Fame and yet America gave to the world one of the greatest, if not the greatest, contribution to medical science, thus inaugurating a new epoch in the history of medicine.

"This epoch was ushered in on what is now known as Ether Day, October 16, 1846, when Morton gave the first public demonstration of surgical anesthesia in the Massachusetts General Hospital. Of this event Professor William H. Welch of Johns Hopkins University says: 'The attendant circumstances were such as to make the operation performed on October 16, 1846, in the surgical amphitheatre of this hospital . . . . . the decisive event, from which date the first convincing public demonstration of surgical anesthesia, the continuous, orderly, historical development of the subject and the promulgation to the world of the glad tidings of this conquest of pain.'

"Two months later, on December 21, 1846, Robert Liston performed the first operation under ether in Europe at the University College Hospital in London. The operation was an amputation of the thigh and was painless. Of this discovery Liston said, 'This Yankee dodge, gentlemen, beats mesmerism hollow.' In three months' time the use of ether had become a world-wide procedure. (*The Lancet*, October 26, 1915, 'Ether Day in London, October 16.')"

In a communication to the electors of the Hall of Fame, William J. Morton has called attention to the fact that Dr. Morton applied in vain to his own Government for some compensation and reward for his services; that although his claim as the discoverer was conceded in majority reports of no less than six committees of Congress and various bills were reported, the matter ended with no action favorable to Dr. Morton. Is it not fitting that he who at least made known to the medical profession the practical demonstrability of surgical anesthesia should be given a place among other leading Americans in the Hall of Fame?

COMMISSION ON MATERNITY BENEFITS

Dr. Alfred Worcester of Waltham, President of the Massachusetts Medical Society; Mrs. Helen A. MacDonald of Boston, Mr. Edward E. Whiting of Newton, Editor of the *Boston Record*, have been appointed by Governor Coolidge members of the Special Commission to investigate the question of maternity benefits. The other members of the Commission are Dr. E. R. Kelley, Commissioner of Public Health, and Mr. R. W. Kelso, Commissioner of Public Welfare.

The Commission is to serve without compensation and is to report to the Legislature not later than November 15 at the special session.

At this special session the work of the committee of sixty-one on revision of the statutes will be considered. The only other important matter likely to be considered is maternity benefits.

Thus there are time and opportunity for the medical profession to formulate its views and express its opinions. The duty must not be overlooked.

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MEDICAL NOTES.

Gift of Brazilian Hospital to France.—The hospital which was installed by Brazilians in the Jesuit Fathers' Building at Vaugirard during the war at a cost of ten million francs, has been offered by the Government of Brazil to France, and has been accepted by the French faculty of medicine. Although the hospital will serve for the study of medicine and surgery in general, it will be used more particularly for teaching practical surgery to Brazilian medical students in Paris.

The American Hospital in London.—It has been announced by *The British Medical Journal* that the London Committee of the American Hospital in London will entertain Dr. Charles W. Mayo of Rochester, Minnesota, at dinner in July. The invitations to the dinner, which is to take place at Claridge's Hotel, Brook Street, London, on July 6, were issued by the Earl of Reading, president of the committee in England; Viscount Bryce, the American Ambassador, who is vice-president of the committee, and the Board of Governors of the Hospital. Dr. Charles W. Mayo is a member of the Medical Committee in America; other members are Dr. William Mayo, Dr. Crile, Dr. Ochsner, and Dr. Franklin Martin of Chicago, and Dr. Matas of New Orleans.

One of the most important aims of the American Hospital which is to be established in London is "to act as a link in binding together the two nations for the advancement of medical science as affecting the welfare of humanity." The Medical Committee in London desires to further this object and through the projected hospital and the Fellowship of Medicine to provide for American graduates the facilities in London and other parts of Great Britain which they used to seek in Berlin or Vienna. The committee will endeavor to raise an endowment fund of several million dollars as soon as the institution has become incorporated according to the laws of the State of New York. A new building will not be erected at present in London, but it is probable that within a short time a temporary building may be opened for the reception of patients and as a centre for American graduates visiting Great Britain.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending June 19, 1920, the number of deaths reported was 177 against 167 last year, with a rate of 11.42 against 10.92 last year. There were 26 deaths under one year of age against 21 last year.

The number of cases of principal reportable diseases were: Diphtheria, 45; scarlet fever, 23; measles, 116; whooping cough, 44; typhoid fever, 3; tuberculosis, 57.

Included in the above were the following cases of non-residents: Diphtheria, 11; scarlet fever, 6; tuberculosis, 6.

Total deaths from these diseases were: Diphtheria, 3; scarlet fever, 1; measles, 1; tuberculosis, 19.

Included in the above were the following non residents: Diphtheria, 2; tuberculosis, 1.

Influenza, 1 case.

Appointment of Dr Benjamin White. The appointment of Dr. Benjamin White as director of the division of biologic laboratories of the Massachusetts State Department of Public Health, to succeed Dr. Milton J. Rosenau, resigned, has been announced. Dr. White has received appointments also as lecturer on immunology in the Massachusetts College of Pharmacy and as assistant in the department of preventive medicine and hygiene of the Harvard Medical School.

Bequests to Medical Institutions.—The will of the late Mary Wilson Tucker provides the sum of five hundred dollars each to the Perkins Institution for the Blind and the Melrose Hospital. The Children's Hospital and the Massachnetts Homeopathic Hospital each will receive one-fourth of the residue of the property.

Monson State Hospital.—Notwithstanding the many changes on the medical staff, the reports of the trustees and those in charge of the various departments of the Monson State Hospital, Massachusetts, show favorable results for the year ending November 30, 1919.

The number of patients in the institution has decreased since the beginning of the war. The shortage of help made the labor of such patients as were able to do work more acceptable in the community, and a large number found positions which many of them have succeeded in retaining. In other cases patients who were able to work even a little have been taken home and cared for by their families as their labor seemed to be of sufficient value. Now it is very likely that many of these will eventually return to the hospital. Under home conditions and the responsibility of caring for themselves, quite a number have broken down and have died of acute illness at home.

The appropriations made during the last three years have been used for the needs which seemed to be most pressing at the time, and further appropriations are necessary for alterations in the buildings and working equipment.

From the report of the teacher of the Children's Colony, the academic work has progressed as usual. The children have shown a great interest in the development of their gardens, the products being used at the Children's Colony. The many entertainments and outings during the year afforded them happy recreation.

NEW ENGLAND NOTES.

War Relief Funds.—The following contributions have been announced by the New England War Relief Funds:

French Orphanage Fund	$598,355.51
Near East Relief	355,064.02
Italian Fund	328,991.71
Serbian Child Welfare Fund ..	48,767.00

Miscellany.

WORKMEN'S COMPENSATION ACT.

The following statement embodies the decree of the Supreme Judicial Court in the recent Pimental case, which is commented upon editorially in another column of this issue:

Crosby, J. The employee is a cigar maker and worked continually at his trade for fourteen or fifteen years. Early in the year 1918 he began to have pain in the region of the back of his neck and in February or March, 1919, he consulted a physician, who told him that he had occupational neurosis. On May 2, 1919, he was obliged to give up his work.

William J. Daly, the impartial physician, testified that the employee had "an undeveloped left side; a shortened left leg with sinuses from old pus processes about the left buttock and the anterior surface of the hip; . . . . a faulty posture both in standing and sitting, ... distortion of the spinal column . . . . (the result) of faulty posture, (and) malformation of the thoracic bone cage"; that "all this distortion and malformation had the effect of producing bony pressure on the spinal nerves . . . . so that when the loading upon this region incident upon the muscular action in rolling cigars, took place, after a number of years, it produced neuralgic pain . . . . In consequence of his working and using the movements he did, his work as a cigar maker was a certain consequence of causing his condition. In the first place he sits faulty; his left buttock being undeveloped, his left pelvis sags. He does not sit evenly on the buttocks. In that way he crowds the vertebrae unevenly in the other parts of the spine, so that any sitting occupation could contribute to the brachial pain . . . . In a man with no asymmetry, who was in a fair state of nutrition, this condition probably never would develop. . . . . The particular movements which produce this condition are the rolling process at the end of the making of a cigar, whereby a weight of the forearm, the arm, and some of the shoulder and shoulder girdle are brought down upon the cigar in order to make a firm wrapper." He further testified that he "was of opinion that if the employee had a sitting-down job where there was no muscular loading or tension, as in the rolling process, he might have supported the condition of his spine for years longer without trouble. He believed that the upset factor in the thing was the muscular tension and the loading incidental upon the rolling movements . . . . that the employee's condition would come on or did come on quicker because he rolled cigars than it would have had he worked at any other sitting-down occupation. . . . . He thought that the rolling movements are the movements which brought about the pain. . . . . This employee has not neuritis." Further, "He thought that if the employee assumed a different posture by putting a pad under his left hip, and by raising the table at which he worked, he would go along 'all right' . . . ." "In his opinion, any sitting occupation is likely to cause the neuralgic pain which this employee experienced in the region of his neck. If he sat eight hours a day in his home reading a book 'with his hip in that position, in any position,' he would be likely to have the same sort of a pressure in that brachial region as he had while sitting at his work. If he sat in a chair at his home over a period of fourteen years, reading a book every day, he might get from that the neuralgic pain which he experienced in March of 1919."

Another physician testified that he had examined the employee and that "he did not see how his occupation could produce his condition. This employee's occupation involved chiefly the use of his arms, and his arms were free from all trouble. . . . . This employee's condition is not in the muscles; it is in the skin, as far as he could determine . . . . . that occupational neurosis is due to the action of muscles used in the occupation. . . . . He was of the opinion that there was a mental situation in this case. . . . . He attributed this employee's condition to the combination of a mental attitude and a skin sensation."

The single member found that "while there was an underlying and preëxisting condition, following hip disease, it was the muscular action in rolling cigars for a number of years which precipitated the neuralgic pain and brought into being the personal injury which totally incapacitated the employee for work"; and that "Finally, as a result of the effect of the muscular movements required by his employment in making cigars, acting upon his particular condition of health, neuralgic pain, a personal injury under this act, developed. The employee's total incapacity for work is due to that personal injury and will continue for a period which is not now determinable." He also found that the employee was entitled to compensation under the act. On the same evidence the Industrial Accident Board adopted the findings and rulings of the single member.

The case at bar is similar in many respects to Maggelet's Case, 228 Mass. 57, and is governed by it. While the board found that the neuralgic pain was induced by muscular action in rolling cigars for a number of years, the impartial physician testified that any other occupation was likely to cause the pain from which the employee suffered, and that this condition could result independently of any occupation, and could come from any sitting or standing occupation; in view of this, together with all the other evidence, we are of opinion that the pain could not have been a reasonably necessary result of the employment, and cannot be said to have been a personal injury peculiar to it. We are also of opinion that there was no sufficient evidence to warrant a finding that the employee had neurosis,—a disease with which cigar makers are sometimes afflicted—and the impartial physician so testified; nor is there evidence that he had any disease, the reasonable inference being that the neuralgic pain was not due to his occupation but was rather the result of faulty posture brought about by long and laborious work, a condition which would have been equally liable to arise in whatever employment he might have been engaged, or if not employed at all. McNicol's Case, 215 Mass. 497. Donahue's Case, 226 Mass. 595. Although the condition arose during the course of the employment, it cannot be found to have arisen from it. "A nervous condition dependent upon poor posture of the body in our opinion does not constitute a commonly known and well recognized personal injury consequent upon employment. . . . . But personal injury and disease are not synonymous. They are different in meaning. One does not include the other." Maggelet's Case, 228 Mass. 57, 61, 62.

If it could be held that the employee was suffering from an occupational disease still the Workman's Compensation Act does not in terms include disease. (See St. 1913, c. 817, s. 12.) It cannot be held to cover disease contracted by employees in the course of and arising out of their employment. Pain is not disease, nor is disease resulting in pain a personal injury.

In Hurle's Case, 217 Mass. 223, Johnson's Case, 217 Mass. 388, and Doherty's Case, 222 Mass. 98 there was evidence that the employee was suffering from poisoning arising from the performance of his work. Poisoning has generally been regarded, as in the nature of a personal injury, H. P. Hood & Sons *v.* Maryland Casualty Co., 206 Mass. 223, but the doctrine of those cases which dealt with disabilities in the nature of personal injuries cannot be held to apply to the present case. The language in the opinion in Johnson's Case, *supra*, is to be limited to the precise facts in that case and is not an authority in favor of the contention of the employee in the case at bar.

While the act should be construed liberally, it should not be extended to cases which cannot reasonably be interpreted as within its scope. The statement in Maggelet's Case, *supra*, at page 61, that "No case has gone so far as to hold that a 'neurosis of the nerves' supplying certain muscles, resulting from a posture which causes the employee 'to bend forward with shoulders forward' so as to induce 'pressure on the brachial plexus' is a personal injury," applies in principle to the case at bar, although the employee is not suffering from neurosis, and notwithstanding the finding of the board that a result of the muscular movements required in rolling cigars acting upon his particular condition, neuralgic pain developed. It follows that the decree must be reversed and a decree entered in favor of the insurer.

So ordered.

MATERNITY BENEFITS.

The measures proposed in the early part of the Legislative session for maternity benefits have been fully presented in the Journal.

On April 23, the Committees on Public Health and Social Welfare, sitting jointly, presented Senate 506; Messrs. Nason, McIntosh, Quinn and Churchill of the Senate, and Grant, O'Connor, Harvey, Harrington and G. F. Murphy of the House dissenting.

The provisions were as follows:

> *Section 1.* From and after the first day of December, nineteen hundred and twenty, the department of public health shall have charge of the administration of maternity care, in accordance with the provisions of this act.
>
> *Section 2.* The said department is hereby authorized to furnish, in addition to advice and instruction, nursing and expert prenatal care to pregnant women at home, at some hospital or local clinic at the option of the expectant mother; also nursing or hospital care at the time of confinement if in the judgment of said department the safety of the mother or child requires such care.
>
> *Section 3.* In order to be eligible for the benefits of this act, the expectant mother must agree to accept and carry out such instructions as, in the judgment of the said department, her case requires. All applications for care under this act may be made directly to the said department or through any local board of health or practising physician.
>
> *Section 4.* Maternity cases under this act shall not be given to a city or town physician, in his or her official capacity. The recipient of maternity care under this act, if remaining at home, shall be allowed to choose her own physician, subject to said physician's acceptance of the fee schedule for such cases, and other rules and regulations of the said department governing this act.
>
> *Section 5.* The said department shall make, and may, from time to time, add to, alter, amend or repeal, such rules and regulations as may be necessary to carry into effect the provisions of this act.
>
> *Section 6.* The said department shall report to the general court on or before February first, nineteen hundred and twenty-two, with such recommendations for the further extension of maternity care during the natal and postnatal periods and for such other assistance to expectant mothers, as it may deem advisable.
>
> *Section 7.* For the purpose of carrying out the provisions of this act, the said department may expend from the treasury of the commonwealth a sum not exceeding two hundred thousand dollars.

It will be seen that this bill provided for nursing and expert prenatal care but made no provision for care at the time of confinement, except in the abnormal case.

A month later, on May 26, the Senate Committee on Ways and Means, to whom Senate 506 was committed, reported a new bill, Senate 572. This bill is much longer.

Section 1 provides that the Department of Public Health should have charge of the administration of maternity benefits.

Section 2 provided that

Any woman resident in the State for one year who

> . . . presents to the department of public health at least two months previous to her anticipated confinement, evidence satisfactory to said department that she is pregnant, and who is found by said department to be without means of providing the ordinary and proper care for herself or infant or both during a reasonable period before and after childbirth.

Section 3 left the method of applying for benefits to the Department of Public Health.

Section 4 provided for keeping secret the identity of applicants for aid.

Sections 5 and 6 provided as follows:

> *Section 5.* Maternity benefits may be granted for a period of one or more weeks; the time to be divided before and after confinement in such way as the department of public health may determine. Any woman entitled thereto shall immediately after application be entitled to receive and, in order to be eligible for the benefits of this act, must accept such instruction in general hygiene and infant care as in the judgment of the department of public health the individual case demands, and, in the discretion of the department of public health, hospital care or home nursing, or medicinal care, and such other obstetrical care as may be necessary.
>
> *Section 6.* Maternity cases under this act shall not be given to a city or town physician in his or her official capacity. The recipient of maternity benefits, if remaining at home, shall be allowed in all cases to choose her own physician, subject to the approval of the department, and if removed to a hospital or local clinic to be one of her own selection subject to such rules and regulations as may be fixed by the department of public health.

Section 7 provided against fraud, and Section 8 provided that the father of an illegitimate child should be liable to reimburse the state.

Section 9 provided that

> *Section 9.* The department of public health shall make, and may from time to time, add to, alter,

> amend or repeal, such rules and regulations as may be necessary to carry into effect the provisions of this act, including rules to define and delimit as accurately as may be possible, the conditions under which, and the time when, women are entitled to benefits under this act.

Section 10 dealt with administrative details. The other sections were as follows:

> *Section 11.* The receipt of benefits under this act shall not operate to bring upon the recipient, her husband, or any one else, the status of a pauper within the meaning of the laws of this commonwealth, nor to prevent the acquirement of a settlement.
>
> *Section 12.* This act shall be liberally construed to effect its purpose to preserve the health of the citizens.
>
> *Section 13.* The said department shall report to the general court on or before February first, nineteen hundred and twenty-two with such recommendations for the further extension of maternity care, and for such other assistance to expectant mothers, as it may deem advisable.
>
> *Section 14.* For the purpose of carrying out the provisions of this act, the said department may expend from the treasury of the commonwealth such sums as may be appropriated by the general court.

In the hurried closing days of the session, no bill was passed but the entire subject was referred to an unpaid commission which is directed to report not later than November 15, 1920, when it is probable that action will be taken by the Legislature then sitting in special session. These bills are printed in detail that all physicians may know just what has been done in the Legislative Committees. The subject has aroused very profound interest among the members of the Legislature, and many will seek advice from their physicians.

Correspondence.

WILLIAM T. G. MORTON, THE DISCOVERER AND REVEALER OF ANESTHESIA, AND HIS PLACE IN THE HALL OF FAME.

New York, June 10, 1920.

Mr. Editor:—

On April twenty-ninth you were good enough to publish my open letter entitled "No Physician or Surgeon as Yet in the Hall of Fame." In it I deplored the fact that no physician or surgeon has as yet been found worthy to be named among the great American immortals. I venture to suggest as the three most worthy names, William T. G. Morton, the discoverer of ether anesthesia, Ephraim McDowell, the first surgeon to perform a rational, deliberate, and successful ovariotomy, and J. Marion Sims, a great gynecologist who perfected the plastic operation in the vagina for the relief of vesical fistulae and invented the speculum. I stated that the nominations should be sent to the Senate of the New York University, University Heights, New York City, and that this should be done by every American physician who feels the great injustice done to the American medical profession by the apparent neglect or oversight of the previous electors.

I received many letters of approval of my humble efforts and of my choice of the three names mentioned. A few of my correspondents, however, objected to the name of William T. G. Morton as not being the discoverer of surgical anesthesia, and in the *Journal of the American Medical Association* of April 24, there appeared a strong letter signed by Dr. S. J. Lewis, according to which the priority of the discovery of sulphuric ether as an anaesthetic belongs to Dr. Crawford W. Long. It would lead to no result to recall here all the details of the old controversy between Morton, Long, and Jackson of half a century ago; the fact remains that before any one of these three men thought of the subject of anesthesia, means to subdue pain by all sorts of physical agents, such as various vapors, lotions, etc., were employed, and even hypnosis was resorted to by Eadaile and Ellictson (1790-1868) who operated hundreds of patients in the hypnotic state. Granted that Crawford W. Long discovered the anesthetic properties of sulphuric ether before Morton, he did not make known this method of producing sleep. Long did not prove to the medical profession that surgical anesthesia with the aid of sulphuric ether was "certain, safe and complete." These words were used by Dr. Henry J. Bigelow, a member of the staff which was present during the operation on that memorable day of Oct. 16, 1846.

Concerning the priority claims of Long and Jackson, Dr. J. Collins Warren, Mosely Professor of Surgery Emeritus, Harvard University, who wrote me only recently in reference to this matter, very pertinently says:

> "It is probable that Long performed three or four minor operations with primary anesthetic and then abandoned his claims. As Dr. Keen says, he is deserving of nothing but censure for not having appreciated the value of the agent. Regarding the claims of Jackson and his heirs, it may be briefly stated that the concensus of medical opinions in Boston at the time was and still is that his claim was not accepted."

The question resolves itself into what is meant by priority in the case of a great discovery. In Owen's "Homologies of the Skeleton," we read the following definition of priority: "He becomes the true discoverer who establishes the truth, and the sign of the truth is the general acceptance. Whoever, therefore, resumes the investigation of neglected or repudiated doctrine, elicits its true demonstration, and discovers and explains the nature of the errors that have led to its tacit or declared rejection, may certainly and confidently await the acknowledgments of his right in its discovery."

Francis Darwin in *Eugenics Review*, 1914, makes it still clearer when he says: "In science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs." Morton convinced the world; the credit is his.

The late Sir William Osler, our greatest modern medical historian, to whom I referred in my first communication, considers Morton the inventor and revealer of anesthesia by sulphuric ether, and he speaks of him as a new "Promethus who gave a gift to the world as rich as that of fire, the greatest single gift ever made to suffering humanity." He pertinently asks in one of his latest essays on the subject (*Annals of Medical History*, Vol. i, No. 4):

> "Why do we not give the credit to Dioscorides, who described both general and local anesthesia, or to Pliny, or Apuleius or to Hietho, the Chinaman, who seems to be next in order, or to the inventor of the spongia somifera, or to Master Hazzec Montagna, in Boccaccio, or to any one of the score or more of men in the Middle Ages who are known to have operated on patients made insensible by drugs or vapors?"

In addition to the testimony of Osler, that to Morton and to no one else should be given the credit I quote the following paragraph from a personal letter sent to Mr. E. L. Snell by Oliver Wendell Holmes on April 2, 1893 (*Century Illustrated Magazine*, August 1894):

> "Few persons have or had better reason than myself to assert the claims of Morton to the introduction of artificial anesthesia into surgical practice . . . This priceless gift to humanity went forth from the operating theatre of the Massachusetts General Hospital, and the man to whom the world owes it is Dr. William Thomas Green Morton."

As further evidence that to Morton should be given the credit, I will cite a paragraph from an address by Prof. William H. Welch of Baltimore, delivered on Oct. 16, 1908 (the sixty-second anniversary of Ether Day), as follows:

> "The attendant circumstances were such as to make the operation, performed on October 16, 1846, in the surgical amphitheatre of this hospital, by John Collins Warren, upon the patient, Gilbert Abbott, placed in the sleep of ether anesthesia by William Morton, the decisive event from which date the first convincing public demonstration of surgical anesthesia, the continuous, orderly, historical promulgation to the world of the glad tidings of this conquest of pain. Had this demonstration or any subsequent one of like nature failed of success, it is improbable that we should have heard much of claims to the prior discovery of surgical anesthesia."

I hope this will suffice to settle the controversy for good and that this letter may be as widely published in the medical press as was my first one on this subject.

Dr. Charles H. Mayo, one of the electors of this year, writes me as follows: "It is a sad commentary that no medical man's work has been considered of sufficient importance to warrant a tablet in the Hall of Fame." Let there be no longer a division as to the nomination of Morton for the Hall of Fame. All those who are willing to be helpful in this matter may write to the Senate of the New York University or to any one of the 102 electors. The electors have until October first to make their decision. Fortunately, we have this year among the electors no less than four medical representatives—Major General Leonard Wood, Prof. William H. Welch, and Drs. William J. and Charles H. Mayo. I hope the good and great General will forgive me for still claiming him as one of ours. A list of the 102 electors will be sent to anyone addressing his request to the secretary of the Senate of the New York University.

We should have not only William T. G. Morton, but also the two other great Americans already mentioned who belong to our profession in the Hall of Fame—Ephraim MacDowell and J. Marion Sims. However, William T. G. Morton should be the first to be placed among America's great immortals.

It may not be universally known that Morton died virtually in poverty and heartbroken because he had received no recognition for his epoch-making discovery and daring experiment. I feel that I cannot close this ardent appeal for justice to "the inventor and revealer of anesthetic inhalation before whom in all time surgery was agony" better than by quoting one verse from "The Birth and Death of Pain," a poem by S. Weir Mitchell, M.D., read on October 16, 1896, at the Commemoration of the Fiftieth Anniversary of the First Public Demonstration of Surgical Anesthesia:

"How did we thank him? Ah! no joy-bells rang,
No peans greeted, and no poet sang,
No cannon thundered, from the guarded strand,
This mighty victory to a grateful land!
We took the gift, so humbly, simply given,
And, coldly selfish, left our debt to Heaven.
How shall we thank him? Hush! A gladder hour
Has struck for him, a wiser, juster power
Shall know full well how fitly to reward
The generous soul that found the world so hard."

DR. S. ADOLPHUS KNOPF.
16 West Ninety-Fifth Street, New York City.

THE TRAINING OF NURSES.

St. Louis, Mo., June 7, 1920.

Mr. Editor:—

I have received a letter from Miss Mary C. Wheeler, R. N., part of which is as follows:

Dr. L. H. Burlingham,
Barnes Hospital, St. Louis, Mo.

My dear Dr. Burlingham:

The American Conference on Hospital Service appointed a committee on nursing at its meeting held March 3, 1920. The members of this committee present made a resolution to study the nursing problem as it exists both in the United States and Canada today.

A report from this committee is expected to be in the hands of the Secretary one month prior to the meeting to be held October 4, 1920, in Montreal.

You are a member of this committee. As your part of the investigation, will you write to the American College of Surgeons and the American Medical Association, asking for space in the journal which represents these organizations, also to the *Missouri State Medical Journal* and the BOSTON MEDICAL AND SURGICAL JOURNAL, in which you can invite members to write you in regard to the following points:

> Their opinion of the value of the three-year course for nurses connected with hospitals, the two-year course for nurses connected with hospitals, the high school pre-nursing courses, the Red Cross extension courses, short courses and correspondence courses.
>
> Are the principles laid down in the nursing education in these courses right or wrong? If right, how can it be improved so as to adequately meet the nursing need? If wrong, how should the training of the nurses be made right?
>
> What use are the graduates of these various schools making of this training?
>
> What misuse are the graduates of these schools making of their training?
>
> What, if any, is the nurse wastage during training?
>
> What, if any, is the nurse wastage after finishing their course?
>
> What are some of the reasons for the shortage of nurses today?
>
> What suggestions can be made as to changes in the training to make it efficient and not lower the nursing standards?

Would you be willing that space be given this letter in your JOURNAL, with the request that all those interested write me their views on the subjects mentioned?

Everyone knows the difficulties in the nursing situation and it is hoped that this investigation may help in the solution of the problems.

Yours very truly,
L. H. BURLINGHAM, *Superintendent.*

RECENT DEATH.

DR. EDWARD HERMAN M. SNELL died in New York on June 7, 1920. He was born in Pennsylvania eighty-seven years ago. Dr. Snell was a graduate of the Gettysburg Theological Seminary, the Bellevue Medical college, and the University of Vienna. He was one of the seven physicians who organized the American Academy of Medicine, in 1876. For several years Dr. Snell practised in Europe, and was a delegate from the United States to the International Medical Congress in Europe in 1890 and 1894.

The Boston Medical and Surgical Journal

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SPECIFIC AORTITIS.

By William D. Reid, M.D., Boston.

Syphilitic disease of the aorta has been found in 54 autopsies at the Massachusetts General Hospital, since the case of Jan. 28, 1909 in which the spirochetes were first demonstrated[1] in the aortic wall, and, up to August, 1919, there have been 105 patients treated for luetic aortitis in the out-patient department. I have already compiled a report[2] as regards results on the out-patient group and in this paper shall undertake a fuller discussion of the disease. For this purpose I have utilized the data from an analysis of both clinical and autopsy groups, from my own experience in examining a goodly number of cases in the past few years, and have freely drawn upon the recent literature. In making these studies I have been increasingly impressed with the lack of attention which has been paid to the subject of specific aortitis and with the need of strongly emphasizing its importance.

For the sake of clearness I shall group the material under definite headings.

Frequency. Specific aortitis has been found 54 times or in about 3.5 per cent. of the 1678 autopsies (Jan. 28, 1909 to July 31, 1919) at the Massachusetts General Hospital. In 40 of these cases aortitis was the primary cause of death, and in three of the fourteen remaining, in which this disease was listed as a secondary cause of death, the syphilitic process was advanced to a serious degree. Oberndorfer[3] reported syphilitic aortitis in 7 per cent. of 1437 autopsies, Gruber[4], of Strassburg, in 4.5 per cent. of 6000 case, while Marchand,[4] of Leipsig, in 256 post-mortems of syphilitics with the acquired form of the disease, found syphilis of the aorta in 211 (about 82 per cent.), and in 67.4 per cent. of autopsies on congenital cases. In a personal conversation R. D. Leonard, Boston radiologist, stated that in something over one hundred cases of bone syphilis examined at the Boston City Hospital, roentgen examination of the arch of the aorta disclosed evidence of aortitis in 75 to 85 per cent. Deneke[5] is of the opinion that, in adults, syphilis doubles the mortality of diseases of the circulatory system.

History. It seems best not to give more than a brief account of the history of the development of our knowledge of specific aortitis. To those interested in more detail I would refer to the article in Sir Clifford Allbutt's book.[6]

and in fact this author's painstaking chapter on aortitis may be read *in toto* with profit.

Allbutt quotes Lancisi[7] in 1724 as associating "aneurysma Gallicum" with "impure coitus" and signs of syphilis elsewhere in the body. In 1866 Wagner[8] contributed an accurate macroscopic study but the disease was still confused with atheroma until Dohle,[9] in 1885, wrote his description of the gross and minute appearance of disease of the aorta in a young man with unmistakable syphilis. It is to the English physician, F. H. Welch, that Allbutt gives the credit of establishing our full knowledge of specific aortitis. Welch read his paper[10] in 1875 upon 117 cases of "fibroid aortitis," in 46 per cent. of which there was a clear record of syphilis.

The spirochete in the aortic wall was first demonstrated in 1906 and 1907 by three European observers. Reuta,[11] Benda[12] and Schmorl,[13] and in 1909 Wright and Richardson[1] recorded the first cases in America. In 1914 Cabot,[14] in proposing a new classification of cardiac disease, suggested "syphilitic" as one group. And in 1916 Warthin[15] published his startling paper in which he reported that in the pathological service of the University of Michigan, from 1912 to 1914, one third of all the autopsy cases on adults (41 in all) showed active syphilis on microscopic examination, and in 88 per cent. of these there were syphilitic lesions in the heart.

Etiology. It is clearly pointed out by Allbutt and others that all cases of aortitis are not necessarily syphilitic in origin. At the Massachusetts General Hospital streptococcus endocarditis comes next to syphilis. In infectious diseases and even in the course of the milder exanthemata, aortitis may occur, though perhaps in the majority of cases it is evidenced by no telling symptoms.[4] The recent literature on non-specific aortitis is considerable. Smallpox, measles, pneumonia, diphtheria (due to the toxin) and influenza are cited as causes. Simnitsky,[16] of Prague, who worked with Chiari, estimates that aortitis occurs in half the fatal cases of scarlet fever. Wiesel[17] warns the pathologist that in these diseases microscopic evidence of aortitis is often found where to the naked eye the vessel seems normal. In a recent article on "Non-Specific Aortitis" S. E. Bailey[18] writes that there exists many small dilatations and aneurysms which are clinically unrecognizable for many years.

W. G. MacCallum,[19] in discussing the problem of aortic regurgitation, which is intimately associated with the problem of aortitis, expresses the opinion that the valvular insufficiency is most commonly due to syphilis and part of the aortic process. And on aneurysm the same authority writes: "The character of the syphilitic disease of the arterial wall, which is so preëminently calculated to weaken it in the presence of strong blood pressure, makes it seem probable that more accurate methods of investigation will show the participation of that disease in a very large proportion of the cases, if not in all."

It has been already shown above how in 1906 and 1907 Reuta, Benda, and Schmorl demonstrated the presence of the treponemata in the aortic lesions in adult aortitis, their reports being closely followed by that of Wright and Richardson in 1909. In 1913 Loncope,[20] who has devoted considerable attention to luetic aortitis, asserted that the spirochetes are not constantly demonstrable in such lesions by any known methods, but Warthin,[21] who reports the finding of the spirochetes in seventy-five cases, states that at times much time and patience are required for success. In acquired syphilis he finds them only in the perivascular infiltration in the adventitia, and present in every stage up to nearly complete healing, but never present in the dense fibroid areas. In "our"* cases the spirochetes were demonstrated in 11 of the 41 cases in which search was made.

In 1905 Wiesner[22] recorded the finding of aortitis in cases of congenital syphilis, and in 1907 Rach and Wiesner[23] reported the presence of the spirochetes in the aortic walls of a large number of syphilitic fetuses examined. Klotz[24] completed the story by describing aortic lesions, practically identical with those in the acquired disease, in a case of congenital lues.

Period, or the interval between the syphilitic infection and the appearance of the aortic lesion. The limits of the period are, perhaps, wider than are generally appreciated; in "our"* out-patient group[2] the shortest period between infection and symptoms (not lesion) was 6 months and the longest was 33 years. I have recently examined a man who developed a chancre in June, 1919; there were symptoms of aortic involvement in August, and in September, when I first saw him, there was sufficient evidence (increased supracardiac dulness with soft systolic murmur transmitted outward, etc.) on which to make a positive diagnosis. Harlow Brooks, of New York,[25] states that serious involvement of the heart may begin before or with the secondary stage of syphilis. He reported a case in which death resulted from a minute perforation of the aorta just above the valve before the secondary rash had fully appeared and the diagnosis been made. Moore,[7] too, believes that syphilis attacks the heart earlier than is generally thought, and even as early as the appearance of the secondaries. Frankel[26] puts the lower limits as "very early" and Osler[4] cites the case of a man, aet. 36, in which aneurysm of one coronary appeared only 18 months after the chancre. Allbutt points out that because of the latency of the early cases it is very difficult to estimate the period between the primary infection and the involvement of the aortic wall. Sixteen years was the average period between infection and symptoms in the cases treated at the Massachusetts General Hospital,[2] which is in agreement with the figures 10 to 20 years found in the literature. I believe that more frequently one will find the period to be ten or more years, but the point I wish to emphasize is that the period may be much shorter and that one must not abandon a diagnosis of specific aortitis on the ground of too short an interval since the primary lesion.

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* I use the term "our" as being the simplest term by which to refer to the Massachusetts General Hospital cases of which hospital I am a member of the out-patient staff

Sex. Allbutt gives men the preponderance of three to one over women. In "our" out-patient cases there were but 5 women to 56 men, but in the autopsy group, undoubtedly a safer source on which to base any conclusions, the figures were 40 men and 14 women, or about 3 to 1, as Allbutt states.

Age. As Allbutt well says: "Syphilis of the aorta mars and kills in the prime of life." Thirty-five to 50 years are perhaps those in which the disease most frequently appears. Forty-four years was the average age in "our" out-patient cases, the age limits being 21 to 73 years. One of the autopsy cases was a boy, aet. but 18 years. Osler in his Schorstein Lecture[27] makes mention of two cases occurring at 21 years of age. Congenital cases are not infrequent at the age of 15 to 20 years[1] and are well known in syphilitic infants.

Occupation. In the experience of Allbutt laborious or athletic pursuits are important determinants. Apparently alcohol is unimportant, as the disease occurs in total abstainers.

Anatomy. Before proceeding I should like to draw attention to a few points on the normal anatomy of the aortic arch. Piersol[28] describes the aorta thus: "At its origin the aortic arch presents three rounded swellings, one anterior and the other postero-lateral, marking the position of the sinuses of Valsalva (sinus position of the sinuses of Valsalva (sinus aortae). The diameter of the ascending portion is about 2.7 cm. and that of the descending portion about 2 cm., the diminution appearing rather suddenly below the origin of the left subclavian artery and forming what has been termed the aortic isthmus. Where the ascending portion passes over into the transverse an enlargement of the diameter occurs which is especially well marked in older individuals, and is presumably due to the impact of the blood forced out of the ventricle by its contractions."

Morris[29] gives 2 to 2.25 inches (5.5 cm.) for the ascending aorta and about 4.5 cm. for the transverse part of the arch; Gray[30] places the figures at 28 mm. at the start; while Allbutt[1] states that in a young adult male the aorta measures 5 to 7 cm., and 8 cm. if over 50 years, and rather less in the female sex. When the arch is dilated Morris estimates that the most prominent part is about one quarter of an inch (6 mm.) from the sternum. This space is commonly filled in adults with a pad of areolar tissue and in infants the thymus gland is found there. An appreciation of this retromanubrial space is of importance in correctly interpreting the amount and meaning of supracardiac dulness in a given case.

In my brief search of the anatomical textbooks I have found considerable variation in the aortic measurements. In fact, Gray avoids giving measurements save the one quoted.[30] This leads me to call attention to the fact that there is no fixed type of heart and aorta; the heart fits the body. It may be short and rather wide with a relatively broad aortic shadow, and in another person, with a longer chest and a lower vascular tone; the x-ray may show a heart of the long type with a narrow aorta." It is to the extensive development of roentgenography, undoubtedly, that we owe our present conception of the variations in normal individ nals, in the conflagration and measurements of the heart and aorta.

Pathology. In the records of "our" 54 autopsies there is much variation in tht extent of the pathological findings. As regards the part of the aorta affected,— the first part of the aorta was involved in all but three instances. Further analysis discloses that in 14 cases the disease was evident in only the first part of the aorta, in 14 more it extended to the transverse portion, in 15 the ascending, transverse and descending parts were involved, and in 4 it was continuous throughout the aorta. While it is true the ascending portion of the arch was affected in 94 per cent. of this series of postmortems, I note from the recorded descriptions that not infrequently the process was as extensive in the transverse portion as in the ascending limb, and sometimes more so. When occurring beyond the transverse arch the lesions usually much diminished in amount. In three instances the process was of the character of a band, 1 to 2 cm. in width, just above the valve, and extending ring-fashion round the aorta.

The pathological findings as regards the coronary arteries were as follows: normal, 27; few scattered plaques or slight fibrous sclerosis, 15; orifices reduced in size, 8, in two of which there were a few fibrous plaques in addition, and complete sealing over of one orifice in 4 cases. Of these latter the right coronary orifice was closed in 3 instances to one for the left. I note that Warthin[21] states that in his experience any marked involvement of the large branches of the coronaries, even in cases with anginoid symptoms, was a rare occurrence. This is the more important in conjunction with his assertion that all cases of angina pectoris are syphilitic.

The aortic valve was affected in 41 instances, in 14 of which insufficiency was demonstrable and in a single instance definite stenosis. The pathological description of the process was: slight to moderate fibrous thickening in 35 cases, of which 2 showed some wrinkling, calcareous in 3; and in 6 instances there was extensive fibrous thickening with much wrinkling in 3 of the latter. The base of the aortic cusps was adherent to the contiguous part of the aortic wall in 9 of these autopsies. As regards this last group of 9 cases my first impression was that here was the natural explanation of the frequent development of the regurgitation through the valve, but the autopsy protocols show that insufficiency was demonstrable in but 4 of these adherent cases and in 10 instances the valve was insufficient though the cusps were not bound down. Clinically, aortic regurgitation was present in all 9 with adherent valves, in the 10 other cases demonstrated by the pathologist, and in 2 additional instances. Therefore, it seems reasonable to assume that in most cases the regurgitation is caused by yielding of the aortic ring.

Definite aortic stenosis was found in one case. This is important, as I believe from the literature that the presence of stenosis of the aortic valve is felt to be contrary to syphilitic involvement of the aorta. In fact Mix goes so far as to say: "There is absolutely no such thing as syphilitic aortic stenosis. It is wholly contrary to the law of syphilitic pathology."[31] Believing, therefore, that this case of stenosis is of importance in establishing our diagnostic criteria of specific aortitis, I shall cite those parts of the case history that bear on the problem.

Woman, aged 42, married.

Family history. Two children living and well, one died in infancy.

Past history. Measles, mumps, and scarlet fever as a child.

Present illness. In November, 1908, had an attack of anginoid pain over the heart and radiating to the left arm. Attack so severe that the patient fainted. There has been a dull pain in the same area ever since.

Physical examination. Cyanosis. Heart enlarged to left of nipple and to sixth intercostal space. Systolic murmur at apex transmitted a short distance into axilla. A harsher, rougher systolic murmur at the aortic area and transmitted a short distance into the neck. Aortic second sound louder than the pulmonic second. Pulse poor volume and tension, suggestion of plateau in type.

Patient in poor condition on entrance into hospital and was immediately placed on the dangerous list. Died suddenly 24 hours later.

Autopsy No. 2371, May 1, 1909. Mitral valve normal.

Aortic valve *in situ* barely admits tip of little finger. Its circumference is 5.5 cm. The cusps of the aortic valve show considerable irregular thickening with wrinkling and deformity. On one cusp the thickening is distinctly nodular in character and the surface of this thickening is rough and granular. The cusps are so deformed that the openings of the coronary arteries are hidden.

Aorta. For 10 cm. above the aortic valve the wall of the aorta is irregularly thickened and shows on its surface irregular, small nodules with wrinkling and some puckering. The process is continuous with that on the aortic valve. These thickenings are yellowish in color and on section show a thickened yellow area in the wall apparently largely involving the media and the intima. The aorta elsewhere shows a few fibrous plaques which are more marked near its bifurcation, but in general it is fairly smooth. The arch of the aorta measures 5.25 cm.; the thoracic aorta 4 cm.; and the abdominal aorta 3 cm.

Microscopic examination.

Aortic valve. Sections stained by Levaditi's silver method show much fibrous tissue with considerable necrosis. In the necrotic material many undoubted treponemata are found.

Wall of the aorta. No treponemata found.

Myocardium. In places there is degeneration of the muscle fibres and infiltration with polynuclear leucocytes.

As stenosis is so rare in syphilis and so common in streptococcic endocarditis (note the history of scarlet fever as a possible etiology), it is possible that this case is really an old streptococcemia with a syphilitic aortitis on top of it. I made this suggestion to Prof. Wright but he thought it rather far fetched and that we should accept the facts as they stood.

In their acuter stages, the syphilitic and many other infections of the aorta are not arteriosclerotic but inflammatory; they are, strictly speaking, aortitis.[4] Allbutt describes the process as at first more in the adventitia around the vasa vasorum, and soon involving the media. The intima is last to be affected. It shows thickening and a patchy proliferation of the subendothelial tissue. Elliott[6] emphasizes that the primary seat of the aortitis is along the course of the vasa vasorum, and points out that the prevalence of these vasa nutritia in even the small blood vessels of the cerebral circuit is the reason that endarteritis syphilitica is so common there. Around these vasa vasorum are found collections of plasma and lymphoid cells, and, in the more acute foci, the treponemata may be demonstrated by the Levaditi silver impregnation method.[4] A definite gumma, such as occurs in the heart or liver, is rare. There may be large areas of healing by scar, and in fact the thickening of the intima makes that coat stronger than before. It is pointed out by Hirschfelder[32] and other writers that it is the irregular distribution of the fibrosis and the necrosis, *i.e.*, of the reparative and the destructive changes, which gives the irregular puckered appearance to the aortic wall in cases of advanced aortitis. Elliott contrasts the absence of calcification in the luetic lesion with its prevalence in arteriosclerosis. Warthin[21] emphasizes that the pathological diagnosis of syphilis is essentially microscopic as to the naked eye the tissues may appear sound.

The seat of the mischief is in the suprasigmoid area. In its first stage, a single cushion less than the size of a ten cent piece is a matter of the gravest import, because it threatens vital limbs of the arterial system—the aortic valve and, at their orifices, the coronary arteries.[4] Sir Clifford Allbutt has pointed out the frequency of incipient syphilitic infection of the aorta in angina pectoris in the following words: "Of all the infections the most active, definite, and frequent cause of angina pectoris is syphilis."[4] The same authority notes that the pulmonary artery does not always escape and occasionally the mouths of the side vessels may be blocked but the process rarely extends far into them.

When the process has caused the aorta to dilate considerably it is often a matter of personal choice with the examiner whether he employ the term syphilitic aortitis with dilatation or syphilitic aortitis with aneurysm. I believe the tendency is to agree with Mix[31] that there is no hard and fast line between the two conditions.

Of aortitis of non-specific origin just a word. Klotz[33] is authority for the statement that in rheumatic aortitis the media is involved but the histological picture is not the same as in lues. I shall not attempt further to discuss the pathology of the aortitis occurring in non-specific infections, save to agree with Elliott[6] that the rheumatic form is commonly associated with endocarditis and manifests the tendency common to all infective secondaries to undergo spontaneous healing as the primary cause subsides.

In recent years there has been an appreciation of the fact that coincident with the syphilitic lesion in the aorta the heart proper is often involved. Warthin, of the University of Michigan, is the foremost of those advocating this feature of syphilis of the vascular system. In a study of 50 cases by Brooks[25] the epicardium or visceral pericardium was diseased in 28, the myocardium in 44, and there was a true gumma in five. Moore[7] holds that the process is usually a myocarditis and may be recognized microscopically. From Warthin's studies[13] it is to be inferred that in a case of specific disease of the aorta the heart is also involved and, contrary to the general impression, the cardiac lesion is not necessarily incidental to the aortitis. In line with this one often notes, from a clinical standpoint, poor myocardial function often anticipating or out of proportion to the involvement of the aortic valve.

Symptoms. Allbutt believes that specific aortitis is far more frequent than we are wont to realize and is for the most part insidious.[4] He would divide the cases into acute or chronic, according as the symptoms differed, or rather in respect to intensity, *i.e.*, from a course wholly latent,* to a more or less transitory stenocardia, to a fuller angina, or to the racking angina of the *status anginosus*. Tides of activity may occur.[4]

Pain. If there be symptoms, pain is prominent. It varies from a sense of tightness about the upper sternum to the utter torture of severe angina. It may come in attacks, be associated with exertion or be present almost continuously. In "our" out-patient cases it was most commonly termed "sub-sternal pain," but at times it was described: precordial, under lower part of the sternum, in chest, to left shoulder, in chest and right arm, in left chest and back, in chest, shoulders, and to arms, and in arms and hand.

Superficial internal aortitis of the arch, even when acute, is unattended with pain, or, if some pain be complained of, it receives little attention; in the aortitis of the infections pain is frequently, in some of them generally, absent. In syphilitic aortitis it is more frequent;[4] whereas in atheroma, cases with pain are a small minority.

Shortness of breath was present in two-thirds of our cases.[2] Mix puts it well when he writes: "A sudden dyspnea associated with a rapid heart action in a man in the forties ought always to raise in the examiner a suspicion of specific origin."[31]

Fever is said by Fontain[9] to be common. Its type, he says, is that of sepsis or atypical typhoid, and it has marked remissions. Allbutt,[4] on the other hand, writes that it is hard to find definite records of fever, but that it occurs at times. In our autopsy group of cases fever unexplained by other causes, such as acute lung pathology, septicemia, etc., was present in but six instances, in only three of which did it exceed 100° F. The maximum was 102° F. and the type was irregular or "septic." The amount of aortitis present in these six cases varied from moderate to advanced.

Pressure symptoms occur as late complications. A rather strident "whistling respiration" on exertion, while by no means an initial sign, may yet long precede other respiratory signs as a symptom of pressure.[4] Elliott[6] points out that the direction in which pressure is exerted by an aneurysm and the rapidity with which dilatation occurs and grows are undoubtedly determining factors in the production or absence of symptoms. The same author reports a case, without symptoms, in which an aneurysm caused complete collapse of the upper lobe of the right lung and that this condition was only discovered as a result of a routine roentgenographic examination. A similar case has been found at the Massachusetts General Hospital.

In an analysis of 61 out-patient cases[2] I found symptoms as follows: shortness of breath, pain in the chest, or both, was present in all; shortness of breath in 43, substernal pain in 32, cough in 15, palpitation in 9, and weakness in 6.

Physical Signs may, perhaps, best be considered under inspection, palpation, percussion, and auscultation.

Inspection is of value only in advanced cases, when it may lead us to infer that an aortitis is present. Thus, a visible throbbing of the carotids suggests insufficiency of the aortic valve which we know to be luetic in origin in most cases in adults. A visible pulsation in the suprasternal notch may mean a dilated arch. Again any visible pulsation in the second or third intercostal space near the sternum suggests aneurysm. Cabot[34] emphasizes that a pulsation, if present, may best be detected by looking across the chest with examiner's eyes on a level with the chest. Enlargement of the cervical veins may be noted but should not be expected save in cases complicated by aneurysm and with other signs of pressure.

Palpation. Except in thin elderly people with degenerated vessels the aortic arch is not often to be felt in the supramanubrial notch. It commonly lies 2 to 2.5 cm. below and under some fat and layers of connective tissue. It may be palpable in persons wasted, or neurotic with atonic vessels, in the subjects of Graves' disease, for example, or when, as in high pressure cases, the heart is hypertrophic.[4] In interpreting the value of the palpability, in a given case, of the arch in the supramanubrial notch it is important first to determine the heighth of the diaphragm. In acute cases the arch may be tender to touch.[1] Palpability of the arch of the aorta is, at best, not a particularly reliable sign as it is not always present and occurs also in arteriosclerosis and in some other non-specific conditions.

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* [illegible] of the autopsy group of cases were without symptoms suggestive of aortic disease.

The subclavian sign of Faure, Gerhardt, von Schrotter[35] and others is only occasionally useful. When the aorta is stretched and twisted, the subclavian artery, as the patient depresses his right shoulder, may be thrown up in the supraclavicular notch.

Undue mobility of the cardiac apex in patients having an elongated aorta has been pointed out by Traube.[4] These latter two signs, if positive, in my opinion, have merely some confirmatory value.

Percussion. The supracardiac dulness is most marked in the midmanubrium and commonly the dulness is greater to the right than to the left. The sense of resistance is the best guide. I have found of assistance the bent finger method of percussion as recommended by Plesch,[36] sometimes called the threshold percussion of Goldscheider. It is said that a corresponding area of dulness may be detected at the third to fourth dorsal spines.[4]

Auscultation. Allbutt gives weight to a change in the quality of the second sound as heard in the aortic area. He uses the term "tympanic second sound" to describe the quality of sound which Potain compared to the tabourka, an Algerian drum made of an earthen pot with a skin stretched over its mouth. Allbutt believes this quality is imparted to the second sound due to the muffling of the walls of the ascending aorta. In arteriosclerosis quite a similar sound may be present.

In the cases in which the process has extended to the aortic valve the systolic murmur of aortic roughening or the diastolic of regurgitation may be present. Thus in our out-patient cases[2] (those in which the diagnosis was beyond reasonable question were selected for analysis) one or both murmurs were present in each case. A systolic thrill may or may not be present. In the early stages there may be a remarkable intermittency in the regurgitation where the latter is dependent more on a relaxation of the aortic ring.[4] I have noted that one often must listen with extreme care in order to pick up the fine type of murmur which may be among the early physical signs. The most favorable time is after full expiration and with the patient in the erect or leaning forward posture, as recently so well emphasized by Pardee.[37] Sometimes exercise may intensify the murmur. As pointed out by Austin Flint[38] and others, those who do not use the large diaphragm of the Bowles' stethoscope will occasionally pick up a regurgitant murmur only by listening with the ear applied directly to the chest. The aortic direct murmur is more commonly soft but may, in other cases, be loud and rough. True aortic stenosis with its *pulsus tardus, parvus et rarus* may occur (See case report under the discussion of pathology).

It is not infrequent to find murmurs at the apex due in most cases, if the diagnosis of aortitis be correct, to a relative insufficiency of the mitral valve. The frequent presence of syphilitic myocarditis, as demonstrated by Warthin,[15] and the occurrence in some cases of insufficiency of the aortic orifice furnishes ample reason for the relaxation of the mitral ring. I would especially emphasize here the danger of mistaking, in aortitis with regurgitation through the aortic valve, the presystolic murmur of Austin Flint and the systolic of relative mitral insufficiency for the murmurs of organic mitral stenosis and regurgitation. On this point I shall have more to say when discussing the differential diagnosis.

Blood Pressure. The systolic pressure, according to Oberndorfer,[3] is usually normal unless the valve is damaged. It is the opinion of Allbutt that ordinarily the blood pressure is not raised. In my studies of the records of hospital cases and in personal examination of patients there was nothing characteristic in blood pressure readings in specific aortitis. Thus, in cases not complicated by aortic regurgitation the systolic pressure ranged 110 to 160 and the diastolic from 50 to 95. One pressure of 240 was present in a patient suffering from arteriosclerotic nephritis, and another of 195 was a single record obtained in a man aged 62 and a victim of marked arteriosclerosis.

Other physical signs may be present according to the degree of luetic aortitis and the presence of complications. In the 61 out-patient cases analyzed, the physical signs and the frequency thereof were as follows: Diastolic murmur, 23; diastolic and systolic, 20; a systolic [illegible] the aortic area, 19; systolic at the aortic area and at the apex, 7; systolic at the apex, 2; heart enlarged to the left, 29; to the sixth space, 16; Corrigan pulse, 9; systolic thrill at the aortic area and transmitted to the neck, 2; pulsus alternans, 2; cardiac compensation badly broken, 4.

To support our diagnoses one has recourse to the Wassermann reaction and to roentgenographic examination. I shall therefore consider them next.

Wassermann Reaction. As in other forms of syphilis the Wassermann reaction has been found to vary from strongly positive to negative. Delafield and Prudden, in the latest edition of their book place the test as positive in all but 5 per cent. of the cases of specific aortitis.[39] In 36 cases of aortic disease Cummer and Dexter[40] reported a positive reaction in 27, or 75 per cent.; and Longcope[20] in 35 (or 74.5 per cent.) of 47 cases. The latter author, in summing up the percentage of positive Wassermann reaction, gives the figures as: from 25 to 68 in general cardiovascular disease, from 75 to 80 in aortic insufficiency, from 85 to 95 in aneurysm, and 75 to 88 in aortic disease in general.[20]

But I should like more especially to draw attention to the frequency of a negative response to the Wassermann test and to the interpretation which should be placed on the absence of a positive reaction in the diagnosis of syphilis of the aorta. Elliott, of Chicago, states that, in his experience, it is not uncommon in late syphilitic developments, such as tabes, aortitis and myocardial disturbance, to obtain a negative Wassermann reaction. Mix[31] points out that Warthin has demonstrated the spirochetes either in the myocardium or aorta in individuals who during life had a negative Wassermann reaction. The margin of error has been placed as high as 40 per cent.[6] and will lead us astray if we dismiss the idea of syphilis on a negative laboratory report. Elliott reiterates the impression of the better part of the profession in urging that we should all be a little more tenacious in upholding our clinical diagnosis when we find it opposed by laboratory reports.

(To be continued.)

RENAL CALCULUS WITH NEGATIVE X-RAY FINDINGS.

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It is still not generally recognized by many practitioners that a negative radiogram is insufficient evidence of the absence of calculus in any part of the genitourinary tract. From a careful study of statistics of urinary lithiasis, it is evident that the lower a stone is situated in the urinary tract, the greater are the chances of its being missed roentgenographically. Thus, in renal stone, competent observers have agreed that calculi fail to show in from 6% to 15% of the cases[1]; in ureteral stone the percentage is higher, from 15% to 30%,[2] whereas in vesical stone more than 60% of the calculi fail to cast shadows.[3] Hunner[4] has aptly remarked in a recent publication, "a negative x-ray means nothing, but often proves worse than useless, because it stops further investigation of the urinary tract." Recently, within a period of a few months, four cases of renal stone with negative x-ray findings were observed. The chemical analysis of the stones showed that they were composed, chiefly, of ammonium urates. Interesting is the fact that in two of the patients the stones were latent, causing no symptoms referable to the diseased kidney; and were discovered at post mortem examination.

Case 1. J. W. Male. Age, 48 years. Admitted to Mt. Sinai Hospital August 13, 1918. Patient's general condition poor. History of dysuria, pyuria, and hematuria of three weeks' duration. Two years ago a similar attack; on a few occasions had left lumbar pain, non-radiating. On the day of admission patient had an attack of retention of urine. On catheterization, an obstruction was encountered due to an impacted stone in the pendulous urethra, four inches from the meatus. Unsuccessful attempts were made to remove the stone with an alligator forceps. The calculus was finally forced backward into the bladder with a catheter and twenty ounces of urine evacuated. Radiography demonstrated a small shadow in the pelvis; evidently the calculus, which had been pushed back into the bladder. X-rays of kidneys and ureters negative for stone; the left kidney shadow was enlarged. The patient was not obese and the radiograms were very clear. Following the attempts at removing the urethral stone, urinary extravasation involving the penis, scrotum, and perineum quickly developed, and despite the fact that these regions were widely incised and drained, the patient's condition rapidly became worse, uraemic manifestations developed, and death followed the next day.

Post mortem examination revealed an atrophied right kidney, the organ being about one-third its normal size. This kidney, which never produced symptoms, contained a large branching calculus filling the pelvis and calices. The left kidney was twice its normal size and the seat of numerous abscesses. Six stones, each the size of a small cherry, were found in the pelvis and calices.

Chemical Examination of Calculi. Chiefly ammonium urates; traces of magnesium phosphate and calcium carbonate.

Summary. A patient admitted with urinary retention, due to an impacted stone in the urethra: urinary extravasation caused by attempts at removing same; uraemic, exitus.

Findings. Atrophied right kidney with large branching calculus (latent kidney stone) multiple left renal calculi. Chief ingredient of stones, urates; negative radiograms.

Case 2. M. P. Male. Age, 53 years. Admitted to Mt. Sinai Hospital September 11, 1918, with a history of anuria of three days duration. Three years previously had an attack of right lumbar pain, a month later similar attack on left side. Patient has been well since, until three days ago, when anuria first developed, and complained of headaches, nausea, and pain in right lumbar region.

Physical Examination. General condition is good; patient is perfectly rational, the tongue is dry and coated, the breath uraemic. No costo-vertebral or abdominal tenderness. Blood pressure 165. Twenty-five c.c. of light amber urine obtained per catheter. Urine contained many pus cells, with a trace of albumen. The day following admission, patient voided sixty ounces of urine and felt considerably better. Cystoscopic examination showed an inflamed bladder, with normal ureteral orifices: no obstruction encountered in either ureter. Slightly turbid urine was obtained from the right kidney. Indigo carmine appeared in slight concentration in twelve minutes. The left side yielded blood-tinged urine with no indigo carmine. Pus and red blood cells were found in both specimens. Phenosulphonephthalein output 21% in three hours.

X-ray Examination. "In region of left kidney there is a small shadow, size of a cherry pit, which may be a concretion; no shadows in right kidney or ureter region." Patient remained well until three days later, when temperature rose from normal to 105°, anuria again developed. Two drams of urine obtained by catheterization in twelve hours.

Cystoscopic Examination. Normal bladder; ureters catheterized, no obstructions encountered, no secretion from either side. The only positive physical finding at the time was slight costo-vertebral tenderness on right side. Blood chemical examination showed marked retention, urea 59 mgm. and creatinin 6.8 mgms. per 100 c.c. of blood. The right kidney was explored and found considerably enlarged and studded with miliary subcapsular abscesses. A decapsulation and nephrotomy was done. Following the operation, the patient's condition rapidly became worse and death followed the next day.

Post Mortem Examination. Right kidney enlarged and shows a well-marked pyelonephritis. The pelvis contained four large stones about the size of cherries, with a number of smaller pea-sized calculi in the calices. Along the course of the right ureter, which was considerably thickened, there were found twenty small calculi, each the size of a pea. The left kidney, one-third of its normal size, contained several small calculi. Death due to renal insufficiency with pyelonephritis. Chemical examination of calculi: ammonium urates, traces of calcium and magnesium phosphates.

Summary. A patient with anuria, spontaneously relieved. Cystoscopy demonstrated evidences of bilateral renal involvement. Second attack of anuria; operation; death. Numerous calculi found in both kidneys, also along course of right ureter, although urethral catheter was passed into pelvis on this side without encountering any obstruction. Stones from both kidneys uratic. Right kidney enlarged and pyelonephritic. Negative x-ray findings; other side positive shadow; atrophic kidney.

Case 3. D. K. Female. Age, 55 years. Admitted to Mt. Sinai Hospital December 19, 1918. History of anuria of two days' duration, with uraemic manifestations. Prior to this had pain in right lumbar region for three months, accompanied by hematuria and pyuria.

Physical Examination showed a middle-aged woman; attacks of restlessness alternating with drowsiness. The right kidney was enlarged and tender. X-ray examination of urinary tract negative. The patient's condition rapidly became worse, despite the fact that ten ounces of urine were voided the day following admission. The restlessness became so marked that cystoscopy could not be performed. The right kidney was explored and found markedly enlarged. There was considerable retention of purulent urine in the pelvis, and two small calculi were removed through a nephrotomy incision: drainage of kidney. Condition improved for three days; on the fourth uraemia again developed, followed by death.

Post Mortem Findings. Large right kidney containing several abscesses; two large stones in ureter just below uretero-pelvic junction.

one in upper calyx. The left kidney, which was the site of the inflammatory process, contained two calculi in the lower pole. Stones composed chiefly of ammonium urates.

Summary. A patient with uraemic manifestations; negative x-rays. Bilateral diseased kidneys with calculi. Latent stones on the left side.

Case 4. Male. Age, 31 years. Admitted to Mt. Sinai Hospital July, 1919. History of five weeks' duration of left lumbar pain, radiating to thigh, accompanied by urinary frequency.

Physical Examination negative. Kidneys not palpable. X-ray of urinary tract negative. Cystoscopy showed a normal bladder with normal ureteral orifices. Right ureter catheterized; clear urine; good indigo carmine in twelve minutes. Obstruction encountered in left ureter at 25 cm.; cloudy urine obtained with weak indigo carmine concentration in twenty minutes. A second x-ray was also negative; despite this fact, a tentative diagnosis of a calculus impacted at the uretero-pelvic junction was made. This was confirmed by passing a wax-tipped bougie, and obtaining positive scratch marks. Five days later the patient passed a smooth yellowish stone, the size of a large cherry pit. Analysis of the calculus showed it was composed chiefly of ammonium urates.

The question most naturally arises as to the cause of these radiographic failures, for as such we must necessarily class them. A number of years ago, poor radiographic technique was held responsible. With improvement along these lines, better results have been obtained. However, as shown by previously quoted statistics, quite a number of calculi are still missed. Obesity is a factor which must be considered; another is the chemical composition of the stone. It was formerly believed that the majority of renal calculi were composed chiefly of urates and uric acid. These concretions are translucent to the x-rays, and seldom throw shadows. All stones which failed to show in the radiogram were considered uric acid or uratic in origin. Recently it has been demonstrated by able chemists[5] that the majority of primary renal calculi are composed principally of calcium oxalate salts. Numerous instances have been reported in which phosphatic and oxalic stones failed to show in the radiogram, thus demonstrating causes other than the chemical composition, to account for the failures. Freyer,[6] a number of years ago, offered as an explanation, the theory that many stones are translucent to the x-rays when covered by an inflamed kidney, or by condensed fat, or when surrounded by pus. As proof, he cited the following: A patient with a palpable kidney mass x-rayed with negative results. At operation a large phosphatic calculus was found. The calculus removed, was then placed under the opposite healthy loin, which was radiographed, and the stone distinctly shows. A similar case was subjected to the same procedures with similar results. In both instances the kidneys containing the stones were enlarged and inflamed. Freyer, therefore, concluded that "certain inflamed kidneys hid stones by not obstructing the x-ray." In two cases of this series, the kidneys removed at post mortem were x-rayed with the stones placed *in situ* and distinct shadows were obtained; thus demonstrating that the calculi themselves were not translucent to the rays.

From this résumé, it is evident that there are a number of causes for negative radiograms. The subject is a complicated one and requires careful study to clear up the mooted points in question.

CONCLUSIONS.

These four cases serve to illustrate several interesting facts: 1, Negative radiographic findings in renal lithiasis are not infrequent, four such cases being observed within the period of a few months. 2, Latent kidney stones are also not uncommon; in two cases there were no symptoms referable to the side on which calculi were found. 3, The chemical analysis showed urates to be the predominating constituent in all four cases. 4, The passage of a ureteral catheter unobstructed into the pelvis of the kidney does not prove the absence of a ureteral calculus. 5, The wax-tipped bougie is of value; it will every now and then demonstrate the presence of a stone when other means fail. 6, Conservation should be the watchword in all operations upon the kidney. Nephrectomy should be practised as a last resort, for despite negative radiograms, and absence of symptoms, the opposite kidney may be the seat of calcareous disease.

ADDENDA SINCE PAPER WAS SENT FOR PUBLICATION

Case 5. Female. Age, 27. Admitted to Mt. Sinai Hospital, service of Dr. Beer, March 4, 1920. Family history, negative. Past history, negative. Present illness began five months ago with dull pain in right lumbar region, non-radiating. Frequency of urination by day and night, no hematuria; chills and fever at onset, never passed calculi.

Physical Examination. Lower pole of right kidney palpable. Urine—moderate white blood cells, occasional red blood cell. Cystoscopy—normal bladder, diminished indigo-carmine secretion from right kidney; both urines clear macroscopically: moderate number of white blood cells, few red blood cells; urea 0.2%. Left kidney, occasional white blood cell; red blood cell; urea, 1.8%; x-ray examination of urinary tract on two occasions negative. Passage of wax tipped catheter into right renal pelvis, positive scratch marks obtained; this was verified by a second examination. Diagnosis—Right renal calculus. Operation (Dr. Beer)—Pyelotomy and nephrotomy for calculus. Large adherent kidney, with multiple subcapsular abscesses. Pelvis opened and several large calculi, covered with a fibrinous exudate were found in pelvis and calices. Decapsulation—nephrotomy and drainage. Patient did very well after the operation for three weeks, then had a severe attack of pyelonephritis, with chills and temperature as high as 105. This attack lasted five days and subsided without operative interference. Chemistry of stone—Calcium carbonate, ammonium urates, ammonium and magnesium phosphates.

Comment. It is very likely that the layer of fibrin which surrounded the calculi may have been responsible for the negative radiograms.

REFERENCES.

[1] Cabot: Errors in Diagnosis of Renal and Ureteral Calculi. Trans. Amer. Asso. Genito-Urinary Surgeons, Vol. x, 1915.

[2] (*a*) Braasch and Moore (Quoted by Stewart): Am. Jour. Surg., November, 1915; (*b*) Beer: Diagnosis and Treatment of Urethral Calculi. New York State Jour. Med., October, 1916; (*c*) Geraghty: Ureteral Calculi. Surg., Gyn., and Obstet., 1915, Vol. xx.

[3] (*a*) Beer: Jour. A. M. A., Oct. 11, 1913; (*b*) Hyman, A.: Value of Roentgen Ray in the Diagnosis of Vesical Calculus, Interstate Medical Journal, Vol. xxiii, Nov. 8, 1916.

[4] Hunner: Stricture and Calculus of the Ureter, New York State Med. Jour., September, 1919.

[5] Rosenbloom and Kahn: Jour A. M. A., Dec. 31, 1912, p. 2252.

[6] Freyer: The Value of Radiography in the Diagnosis and Treatment of Urinary Stone. J. & A. Churchill, London, 1908.

OBSERVATIONS ON THE AGGLUTINATING TITRE OF THE BLOOD SERUM IN TYPHOID FEVER.

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INTRODUCTION.

The diagnostic value of the agglutination reaction in typhoid fever has been of great service ever since its clinical application by Widal in 1896. Its quantitative determination from time to time during the course of the disease was done by Widal in 1897.[1] He told of a fatal case with high powers of agglutination, and he told of one case, with relapse, in which there appeared no agglutination during or following the disease. He concluded that the dilution in which the patient's serum is able to agglutinate typhoid bacilli is independent of the state of the patient's immunity. Cases in which the patient's serum fails to agglutinate at any time during or following the disease must be rare, and it is not unlikely that Widal was dealing with a paratyphoid in the above case. Others have concluded that the ability of the typhoid patient's serum to agglutinate the bacilli, while of great value in diagnosis, is of no value in prognosis[2].

To assume that the height of the agglutinating titre indicates the height of the patient's immunity is to forget that both of the factors, the disease and the patient, are subject to wide variations—not only in the individual case, but in the course of the disease of the individual. Nor is the formation of agglutinins by any means an index of the many known and unknown processes of active immunization going on in the case of typhoid fever. The existence of agglutinins in the serum indicates only the existence of past or present antigen, or the typhoid poison, in the individual. The concentration of demonstrable agglutinins, that is, the potency of the patient's serum in varying dilutions to agglutinate the typhoid bacilli, or the agglutinating titre as it is called, may indicate excess of agglutinins over antigen in the individual at the time the serum was withdrawn. With the idea that the concentration—the agglutinating titre—does indicate this excess, the following observed cases are of interest.

METHODS.

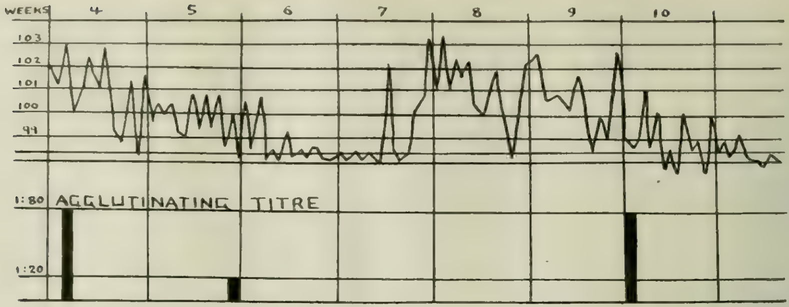
In a small series of comparisons the following differences between the macroscopic and the microscopic methods of testing the agglutinating titre were observed:

1. The macroscopic test is fully as simple as the microscopic, and requires no more time, although the final reading is obtained some hours later.

2. The macroscopic test is positive in lower dilutions than the microscopic—that is, it is not so delicate.

3. The macroscopic end-point is more definite and more constant than the microscopic.

All agglutinations recorded were done by the macroscopic method, using a salt solution suspension of typhoid bacilli, prepared in a way similar to that suggested by Zinsser[3]. The dilutions were made either with the capillary pipette or by the drop method. Except for these two methods of making the dilutions, all recorded agglutinations were done uniformly. They were placed in a water-bath between 37 and 40 degrees, Centigrade, for two hours, and then in the ice box over night.



Case 1.

CASES.

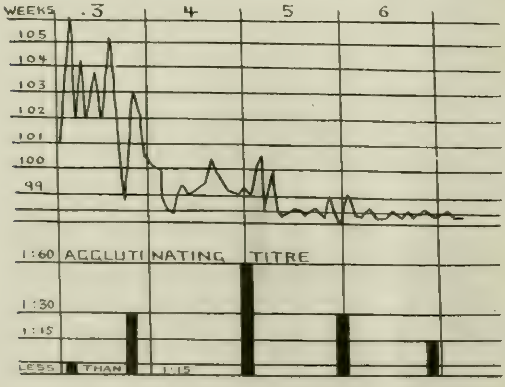
Case 1. Patient entered hospital in fourth week of disease. A positive blood culture was not obtained, but a careful differential diagnosis, week by week, left no other clinical diagnosis than typhoid fever. On admission the serum agglutinated 1:80. At the end of the fifth week, before the temperature had steadied down to normal, the agglutinating titre had fallen to 1:20. Toward the end of the seventh week a very severe relapse appeared, and in the tenth week the agglutinating titre had again risen to 1:80. After the tenth week convalescence occurred without further complication.

Case 2. Patient entered hospital in third week of disease. Diagnosis made by blood culture. The agglutinating titre less than 1:15 on admission rose to 1:30, then to 1:60 at the beginning of the fifth week. From this point it fell more gradually and convalescence was uninterrupted.

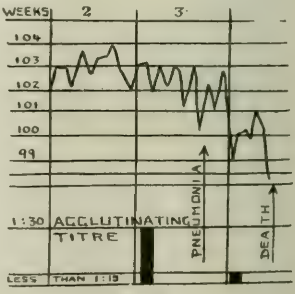
Case 3. Patient entered hospital in second week of disease. Diagnosis by blood culture. One week later the serum agglutinated 1:30. Pneumonia and death followed shortly, the agglutinating titre dropping to less than 1:15 a few days before death. B. typhosus was obtained in culture from a post-mortem lung puncture.

Case 4. Brother of Case 3, entered hospital in second week of disease. Diagnosis by blood culture. In the beginning of the third week the agglutinating titre was 1:15. Fever lasted to the end of the third week, when the agglutinating titre had risen to 1:30. Temperature then remained normal and convalescence was uneventful.

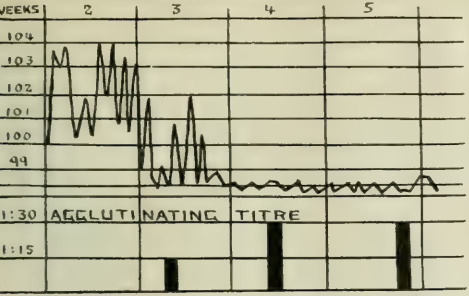
Case 5. Patient entered hospital after one week of fever. Diagnosis by blood culture.



Case 2



Case 3



Case 4

The hectic course of this case is best represented by the accompanying chart.

A high *white count* may occur during the initial septicaemia, and before the bacilli have established a focus in the bone marrow—for which tissue, among others, they have an elective affinity[4]. This is the explanation offered for the white count on admission—16,500. At the end of the fifth week it had fallen to 6,000.

Blood cultures were positive twice in the first week and again in the second week of the relapse. The second culture was positive at the same time that the serum agglutinated 1:60. This emphasizes the fact that the agglutinins, while specific, are not bactericidal for the typhoid bacilli. The bacilli take a purely passive part in the phenomenon of agglutination[5]

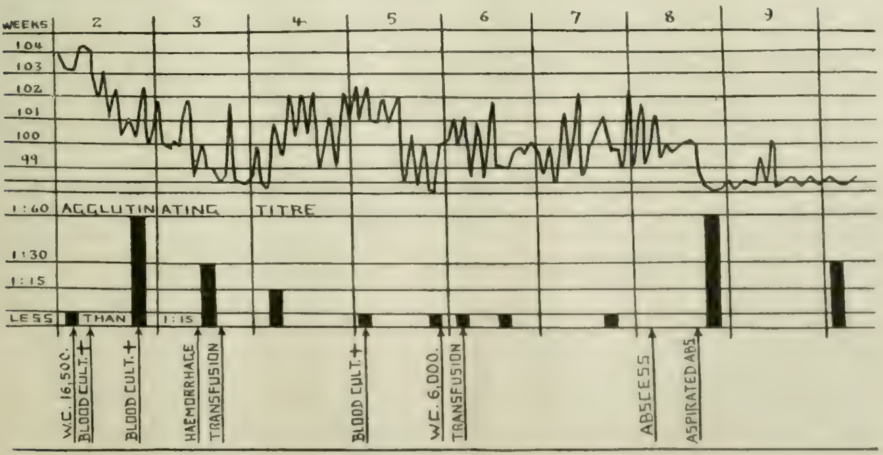
Agglutinations, except for the first one, were all made with a suspension of bacilli raised from the first blood culture. They therefore represent the action of the patient's serum on his own organisms. A fall in the agglutinating titre heralded the relapse. Throughout the relapse the titre was low—less than 1.15—and it rose only when recovery was close at hand.

Complications started in the third week with a severe haemorrhage from the bowel, which necessitated transfusion. In the fifth week, with the relapse at its height, and with a marked secondary anaemia, a second transfusion was done. The donor for the second transfusion was immunized with typhoid vaccine till his serum agglutinated 1:60, but it had little or no effect on the agglutinating titre of the patient's serum. Attempts to secure the use of convalescent typhoid patients for donor purposes were futile. In the eighth week an abscess of the fifth left costal cartilage formed. It was aspirated, and B. typhosus was cultured from it.

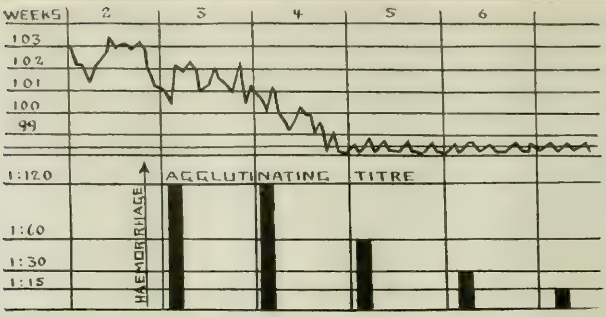
One might speculate as to whether or not this abscess acted as a sort of autogenous vaccine, hastening recovery and raising the agglutinating titre to 1:60 again, a week later.

This case illustrates the following axioms of diagnostic caution. A high white count at onset does not rule out typhoid fever. A negative agglutination late in the disease does not rule out typhoid fever.

Case 6. Patient entered hospital in the second week of disease. Diagnosis by blood culture. This patient also had the accident of



Case 5



Case 6.

intestinal haemorrhage. He was an alcoholic type, which fact greatly increased the severity of the disease from a clinical standpoint. His agglutinating titre was 1:120 through the third and first part of the fourth week, after which improvement became very evident. The titre then gradually dropped off, and there was nothing remarkable about the convalescence.

SUMMARY.

Conclusions are not justified in this small series. In summary the most striking point is the relation between the clinical course of the disease and the changes in the agglutinating titre from week to week.

In cases 2 and 4 there were prompt recoveries, and in both the agglutinating titre rose to the point of defervescence.

In case 6, which was more severe probably because of alcoholism (haemorrhage being always a possible accident), the titre stayed at 1:120 till recovery was becoming quite evident.

In cases 1 and 5, which were both long and tedious, the titre dropped unmistakably before clinical recovery was at all apparent, and it rose again at or near the point of true recovery, some weeks later.

In case 3, which was complicated by pneumonia and ended by death, the titre fell from 1:30 to less than 1:15 before exodus.

In these cases, then, a fall in the agglutinating titre of the serum before clinical recovery was becoming evident, was a sign of poor prognosis.

REFERENCES.

[1] Etude sur le serodiagnostic. Annales de l'Institut Pasteur, Mai, 1897.
[2] Altstaedt: Zur Typhusimmunität. Berl. klin. Wchr., 1915, 1, ii.
[3] Zinsser: Infection and Resistance. The Macmillan Company, 1914.
[4] Gay: Typhoid Fever. The Macmillan Company, 1918.

PROSTATECTOMY.

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Urologist to St. Luke's, Woman's, and Lying-in Hospitals.

(Concluded from page 47.)

History reveals to us the various methods which have been employed in attempts to relieve obstruction due to so-called prostatic hypertrophy, with which we are now dealing. I have briefly sketched the evolution of the chief procedures employed for this purpose, both per urethram and by open operation. Attempts to remove a median lobe, leaving lateral enlargements, result in a loss of support of the lateral lobes, which fall into the vesical orifice, the obstruction often being subsequently more complete than before. Blind operations per urethram, and various punch operations, are of little value where true hypertrophy is present. There are many early cases in which congestion plays a very important part, and when relieved little if any true hypertrophy is left, or, not infrequently, a fibrous prostate or contracture of the vesical neck remains. It is in this type of cases especially, and because we cannot be sure at first sight that we are not dealing with this type, that proper consideration of the case should be given before deciding upon operative measures. The amount of residual urine, the presence or absence of infection is not as important a deciding factor as is the study of of character of the obstruction present. It is this true tissue change, after all superimposed conditions have been removed, that must decide us, always having in mind a borderline case, and the frequent transition of benign hypertrophy into malignancy.

Given a true hypertrophy, a mechanical obstruction of the vesical neck which should be removed, how should the case be handled? Can we divide our cases into those which can be rushed through, in which we will expect no complications, and, on the other hand, those in which we expect complications? This has not been my experience, and apparently not that of others, as attested by the frequent change in views of operators regarding the technic in handling such cases.

True progress in the perfection of the technic in dealing with these cases during the past twenty years has been due largely to the combined efforts of urologists in this country and abroad. While the general surgeons have fallen in line to a greater or less extent and, especially when working in conjunction with the specialist, have, in some instances, obtained good results, still progress has been due to special investigations of those working in this field, and to attention to details before, during and after operation.

The work of Young[47] stands out prominently. His modification and perfection of the open perineal operation, notably that of Proust,[48] removing the prostate under sight, with a careful dissection of the perineum; lateral capsular incision; the use of a tractor; avoidance of the external sphincter muscle, bulb and triangular ligament, ejaculatory ducts and rectum; good drainage after operation; control of hemorrhage, and early mobility of the patient, have placed this method upon a new footing. Young's early statistics of 238 perineal prostatectomies with a mortality of 2.9 per cent., and 128 operations with no mortality, speak for his work. That this operation requires an intimate knowledge of the anatomy of the perineum, greater skill in operating does not allow for complete preoperative drainage, with its beneficial results, and that, in the hands of the average urologist, it will be attended by more complications than the suprapubic, there can be no question.

Freyer[49] reported 644 suprapubic prostatectomies with 39 deaths, a mortality of about 6 per cent.

Stillman[50] brought out the point of suprapubic drainage as a preliminary step to suprapubic prostatectomy. Bevan[51] called attention to the advantage of this step in the following words: "Nothing has been more satisfactory than the secondary prostatectomy ten days, two weeks, or three weeks later, when the patient was in good condition, the operation being performed without any instruments whatever, simply through the fistulous tract with a gloved finger, with the patient under nitrous oxide gas. If that method is adopted and badly infected cases first drained and prepared for prostatectomy, the suprapubic operation will have as little or less mortality than any other case, and the resulting cure will be more satisfactory and more complete."

The list of urologists adopting this method to a greater or less degree includes Pilcher, Cabot, Chetwood, Hagner, Kolischer, Gardner, Schmidt, and many others.

Pilcher[52] adopted this method as a routine, and has been followed in this respect by Gardner.[53]

My own experience covers but seventeen years, the first three years, observing and assisting in such prostatectomies as occurred in a general surgical service, and for fourteen years, in operating. My early prostatectomies, performed when the crystallizing stage of the evolution of prostatic surgery was not far advanced, were done by the blind perineal method of intraurethral enucleation. In a four-year experience in this operation, while in charge of an active general surgical service, although there were no deaths, and the operation was looked upon as not difficult, the good results were overshadowed by the few who are now doubtless still going about wearing a urinal and cursing their existence. This was followed by one-stage suprapubic operation, with occasional open perineal prostatectomies, and latterly by an infrequent open perineal operation, but all others by a suprapubic drainage followed by removal of the prostate when the patient's condition warranted it.

There have been 147 cases, with three deaths, but, as before stated, incontinence nearly as bad as a mortality characterized three of the perineal cases, a perineal fistula persisted in two, constriction of the vesical neck in two, nodules of prostate were left about the vesical neck in two. One death resulted in a one-step suprapubic prostatectomy from hemorrhage when a continuous irrigation was used, one from renal insufficiency, and one of the two-stage cases from uremia. From subsequent observations, this last case might have been saved had a longer time been allowed to elapse between operations.

I have treated by palliative measures a large number of prostatics whom others would have subjected to operation. These have been early or borderline cases — small hypertrophies, fibrous prostates, carcinoma, and those cases falling in the last group before mentioned, namely, when the obstruction is partial and due to a small amount of obstructing tissue. These cases have been treated by destroying the obstructing tissue by fulguration or removal with the intraurethral punch, using the Young modification of the Mercier instrument, with proper care of the individual to eliminate infection of the urinary stream.[54] Few of these cases have later come to radical operation.

However, from observation and from results obtained in the two-stage suprapubic prostatectomy, the real grasp one has upon the situation at all times, the possibility of progressing step by step, and the excellent results obtained, I now advise prostatectomy in some borderline cases which formerly I would have treated palliatively. I advise it as a radical cure for a condition which will probably progress, may become malignant, and is a constant menace to the patient, limiting his activities.

It is not my desire to advocate one operation for all cases, but I do believe that the suprapubic two-stage prostatectomy is the safest, is based on the best principles from the anatomical and physiological and pathological standpoint, involves fewer complications, and gives the best functional results of any method of procedure.

The arguments which have been advanced against primary suprapubic drainage are that it entails two operations; that sudden removal of bladder pressure in over-distended cases is dangerous; that infection of the abdominal wound and prevesical space takes place; that the resulting cicatrix interferes with the second operation, making it more difficult; that a fistula is more apt to result, and that it requires too much time.

Catheter drainage per urethram is offered by some as a substitute in some cases to be operated by the suprapubic route and as a routine in the perineal cases.

The first argument concerning the two operations can be answered by the fact that two minor operations, the first under local or gas-oxygen anesthesia, the second, on a much improved patient, under gas-oxygen, are to be preferred to one operation of longer duration, upon a patient in poor condition, where shock and hemorrhage are added to renal insufficiency which is sure to follow complete bladder drainage in varying degrees in every case.

If the psychic effect is not detrimental to the individual, local anesthesia, with an anodyne one hour before operation, will be sufficient for the bladder drainage. If the patient is nervous and excitable, gas and oxygen anesthesia is better. An incision is made through skin, subcutaneous tissue and fascia, the recti are separated and retracted, the peritoneal fold is elevated, the bladder drawn upward slightly, and a puncture wound made in the fundus of the bladder through which a large mushroom catheter is inserted on an introducer, lubricated so as to slip in easily. The mushroom end of this catheter immediately opens when released, the catheter, completely filling the opening in the bladder, is kept clamped off, and by pulling the mushroom up against the bladder wall leakage is prevented, thus it is not necessary to empty the bladder completely, overcoming the second argument against suprapubic drainage. A catgut suture in the bladder wall above and below the tube reinforces the tube in its position. It is not as important to have the bladder opening as high up on the fundus with preliminary drainage as when the operation is done in one stage, as the wound granulates more readily after the second operation. Thus the urethra is put at rest; the traumatism incident to catheterization is prevented; absorption from the irritation of an indwelling catheter is eliminated; congestion of the prostate and vesical neck is reduced; free drainage of the bladder is adjusted; back pressure upon the kidneys is removed; thus making it possible to flush the patient, to build him up, to reëstablish a kidney balance, which is always disturbed by the removal of back pressure. This disturbance is characterized by a reaction which varies from slight drowsiness, dry tongue, loss of appetite, flatulence, diminution in urinary output or increased output with diminished urea, to profound uremia. Under proper measures the principles involved being directed toward complete bodily elimination, the patient rapidly improves, and in some cases at the end of a week or ten days has attained an even keel which will be but slightly disturbed by the second operation.

The renal tests during this procedure are important and interesting. I refer to blood urea nitrogen content, phenosulphonephthalein output, total quantity of urine, and specific gravity. These tests are sufficiently accurate so that, when combined with the clinical picture, the patient's condition can be closely followed.

An increase of blood urea nitrogen, diminution of phthalein output and total urine, with lowered specific gravity, takes place at once after drainage of the bladder. A return of blood urea to 30 mil. or lower is desirable and an elevation of phthalein to 40 per cent. or over for two hours before the second operation. The maintenance of a new level even though not up to 40 per cent., is more important and favorable than wide variations in percentage.

To illustrate: A patient entered the hospital with an over-distended bladder and 30 ounces of residual urine. His blood urea was 32 mil., phthalein output 38 per cent. After drainage, the blood urea rose to 40 mil., and phthalein dropped below reading point. It took three months for this patient to strike a level when the urea remained at 22 mil. and phthalein from 37 to 41 per cent. Although the patient was profoundly uremic after the drainage and manifestly would have succumbed had shock been added, he passed through the prostatectomy without the slightest reaction and his bladder was closed at the end of seven days after the prostatectomy.

Nearly all prostatics have relapsing pyelonephritis. An exacerbation usually follows the bladder drainage, due to kidney congestion, adding to the reaction. At the Mayo Clinic, where the indwelling catheter is used for preliminary drainage, vaccines are administered during this period.[44] A slight infection of the wound in an occasional case may take place after drainage. If the bladder is irrigated previous to the operation and filled with an aseptic solution, the tube carefully inserted and held tightly in place, the abdominal wound closed with figure-of-eight silkworm gut sutures, a clean sinus will form, lined with granulations, the prevesical space does not become infected, and we have a walled-off area which will not become infected after the prostatectomy, and will heal more rapidly, than a fresh wound. Moreover, the urinary infection, both kidney and bladder, has been largely cleared up by the period of drainage with increased elimination and flushing, and the urine which later flows over this walled-off area is less infectious.

Increased difficulty and prolongation of the second operation, due to the presence of scar tissue, has been given as a contraindication to the preliminary drainage. When drainage has been maintained for a prolonged period, that is, over two weeks, a firmer wound is found about the sinus. When the tube is removed the sinus can be dilated, the skin and fascia cut sufficiently to admit two fingers into the bladder, and I have found this a complication of slight importance. Fresh tissues are not opened up.

The question of the length of time of operation is not important beyond certain limits. The first operation under a local anesthetic or gas-oxygen, free from shock of hemorrhage, does not have to be performed by the watch, and the patient is so much improved in condition at the time of the second operation that a few minutes more cause no harm. Spinal analgesia may be employed for the second operation.

The wound is opened as described above for the second operation. One finger is inserted into the urethral orifice and the prostatic lobes separate, the urethral mucous membrane tearing at the point of separation of the lobes. The finger is then gently swept around between the adenomatous mass and the prostatic capsule, freeing the tumor, assisted by an elevation of the prostate by the fingers of an assistant in the rectum, and the prostate is lifted out. Next to renal insufficiency, hemorrhage is the most important complication in prostatectomy. To allow a patient to ooze from an open wound is bad surgery. We would not allow it in other operations—why in this?

When a patient succumbs from shock or suppression following prostatectomy, it means hemorrhage or a further lowering of resistance from continuous bleeding in the presence of impaired elimination. The amount of bleeding at operation is not an indication of what we may later expect. Therefore we take the proper precaution in every case, and our results have substantiated the procedure. We use a Hagner bag or a Pilcher modification in all cases. This certainly controls the bleeding. The method is more satisfactory than (1) various methods of packing, the packing being difficult to maintain in position, painful to remove, and may cause secondary hemorrhage upon its removal; (2) suture of the capsule, which requires a much larger wound for sight and the consumption of more time at the operation; and (3) the use of a flap of tissue, which acts as an irritant and later suppurates. With no bleeding, and kidneys that have regained their function from preliminary drainage, we expect little reaction. A large tube which is inserted into the bladder after the removal of the prostate, can usually be removed twenty-four hours after the prostatectomy, for with a bladder which has cleared up by drainage and the absence of blood clots in the bladder which later disintegrate, the tube is no longer necessary. Traction on the bag is maintained up to twelve hours, when it is released, emptied, and allowed to remain in position, to be used again if bleeding takes place. We have not found this necessary. When the bag is removed twenty-four hours after the prostatectomy, which is easily done, and which has never, in our experience, been accompanied by secondary hemorrhage, a soft catheter is attached to the end of the tube on the bag and is drawn up into the bladder through the urethra. The catheter is carefully placed so as to drain the bladder, and can often be seen through the suprapubic wound lying in the bottom of the bladder. The silk suture by which the catheter is attached to the end of the tube in drawing it into position can be left long and brought out of the suprapubic wound, and retained for several days, making it possible to change the position of the catheter by pulling on the silk.

The skin of the abdomen is covered with a layer of boric acid ointment, a large piece of oiled silk is placed over this, held down by the ointment, an opening cut in the oiled silk over the wound and the wound packed with a strip of gauze, the outer end of the gauze lying in the oiled silk, where the dressings absorb the drainage, which is usually slight, the oiled silk being folded over the dressing, keeping the patient dry.

If a catheter is not inserted when the bag is removed, one is passed within the next two or three days. A bicoude or natural curve is first used, as it is important to use a catheter that will ride easily over the torn edge of the bladder wall at the vesical neck, otherwise the catheter will engage under the mucous membrane.

The urinary drainage in these cases that have had preliminary drainage and control of hemorrhage after operation is strikingly clearer than under the old one-step method of prostatectomy and before using the bag for the control of hemorrhage.

Following the operation the patient is placed upon fluids at once, also salines per rectum at frequent intervals.

After the removal of the tube the wound is dressed each day—packing carefully to the bottom of the wound, being sure that the bladder opening closes before the wound is allowed to heal externally. If this is done there will never be a fistula, for after the bladder closes, the wound rapidly fills with granulations, healing from the bottom, and is solid. If the bladder end of the wound does not close first, urine leaks into the opening and works its way out, reopening the sinus. These wounds, which are already surrounded by an area of repair and lined with granulations, heal more rapidly and firmly than when the operation is performed in one stage. The average time for closure is twelve days. The catheter is retained in the urethra for two days after the wound has stopped draining to ensure a tight closure.

Elevation of the scrotum throughout is important to prevent epididymitis.

We have the patients sit up in bed as soon as they feel able, but believe that the wound closes more rapidly if the patient does not move about before the drainage through the wound has ceased. We have had no cases of incontinence or fistula following this technic. The sexual power is apparently not impaired.

Perineal prostatectomy we would limit to suppurative prostates not permitting preliminary drainage, and prostatic calculi, and those few cases of malignancy which warrant operation, the malignancy starting in the posterior lobe not reached from above.

The points which I wish to emphasize are as follows:

1. The study of prostatic obstruction has been a slow evolution, extending back over two thousand years.

2. Not until it became possible to inspect the interior of the bladder were measures for its relief placed upon a definite footing.

3. With the advance in the study of cases, operative measures suggested during the period of obscurity were brought forward and perpetrated with renewed zeal.

4. Anatomical and pathological study of cases has resulted in a certain classification.

5. The objects of relief will best be attained by a thorough analysis of the individual, by procedures instituted to remove step by step, with the least possible shock to the patient, the causes of the symptoms, and that prostatectomy for fibro-adenomatous enlargement can best be accomplished by preliminary suprapubic drainage—the removal of the gland being an incident of the convalescence from the drainage. The most important phase in its removal is the control of hemorrhage, followed by a careful attention to details during the healing, insuring a rapid functional cure free from complications.

REFERENCES.

[1] Deaver, John B.: Enlargement of the Prostate, 1911.

[2] Home, Sir Everard: Trans. Philos. Soc., London, 1805, Paper viii; also Practical Observations on the Treatment of the Diseases of the Prostate Gland, Vol. i of his Works, London, 1811.

[3] Todd, Robert B.: The Encyclopedia of Anatomy and Physiology. Edited by, 1836-1839, Vol. ii, p. 422.

[4] Browne, Sir T.: Pseud. Ep., 189.

[5] Gibson, W.: Farrier's Guide, I, ii (1738), p. 17.

[6] Riolanus, Joannes, Filius: Opera Anatomica. Lutetiae Parisiorum, 1649, f. 151 et 167.

[7] Ricketts, B. Merrill: Surgery of the Prostate, Pancreas, Diaphragm, Spleen, Thyroid, and Hydrocephalus. An Historical Review, 1904.

[8] Morgagni: Adversaria Anatomica, Lib. iv; Animadversio, xiv. Also: De Sedis et Causis Morborum, Lib. iii, Epist. 41, A. 19

[9] Hunter, John: On the Venereal Disease, 1788, 2nd Ed.

[10] Baillie: Morbid Anatomy, 1793.

[11] Chopart: Traité des Maladies des Voies Urinaires, Nouvelle Ed., Paris, 1830, ii, 86.

[12] Brodie, Sir B. C.: Works, London, 1865, ii, 527.

[13] Billroth: Clinical Surgery, Translation of New Sydenham Soc., London, 1881, p. 288.

[14] Physick: See Dorsey, John Syng: Elements of Surgery, 1818, 2nd Ed., Vol. ii, 161.

[15] d'Etoilles, Leroy: See Malgaigne's Surgery, Trans. by Brittan, London, 1846, 504.

[16] Mercier: Recherches sur le traitement des maladies des organes urinaires, Paris, 1856.

[17] Harrison, Reginald: The Prevention of Stricture and of Prostatic Obstruction, London, 1881.

[18] Amussat: Leçons sur le rétentions d'urine et sur les maladies de la prostate, Paris, 1832, 218.

[19] Fergusson, Sir William: Lancet, Jan. 1, 1870.

[20] Guthrie: Anatomy and Diseases of the Neck of the Bladder and of the Urethra, London, 1834, 252

[21] Bottini: Il Galvani, 1874, x; La Galvanocaustica nella Practica Chirurgica. Novara, 1873, and Milano, 1876; Clinica Moderna, Roma, 1899, No. 43, f. 341.

[22] Freudenberg: Berliner klin. Woch., 1897, No. 46.

[23] Belfield: Jour. A. M. A., 1887, viii, 303; Med., 1888, i, [illegible]

[24] Watson, F. S.: The Operative Treatment of the Hypertrophied Prostate. Boston, 1888.

[25] Barge, L. Bolton: Med. Rec., 1901, i, 367.

[26] Heine: Archiv. f. klin. Chirurg., 1874, xvi, 79.

[27] Langenbeck: See Leisrink: Archiv. f. klin. Chir., 1883, xxviii, 578.

[28] Iversen: Hypertrophia Prostatae, monograf. fremstillet Diss. Kopenhagen, 1874. See Socin and Burckhardt: Die Verletzungen und Krankheiten der Prostata. Stuttgart, 1902.

[29] May, W. J.: Trans. Minn. State Med. Soc., 1889, 45.

[30] McGuire, Hunter: Trans. Amer. Surg. Assn., 1888, vi, 349.

[31] Poncet and Delore: Traité de la cystostomie sus-pubienne chez les prostatiques. Paris, 1899.

[32] Harrison, Reginald: Brit. Med. Jour., Dec. 24, 1881, and April 8, 1882.

[33] White, J. William: Trans. Amer. Surg. Assn., 1893, xi, 167.

[34] Ramm: Centralbl. f. Chir., 1893, No. 35, S. 759.

[35] Mears: Trans. Amer. Surg. Assn., 1893, xi, 210.

[36] Gibbs: See Ricketts, *loc. cit.*

[37] Kuchler: Deutsche Klinik, Berlin, 1866, xviii, 458.

[38] Demarquay: See Leisrink, *loc. cit.*

[39] Spanton: Lancet, 1882, i, 1032.

[40] Leisrink: Archiv. f. klin. Chir., 1883, xxviii, 578.

[41] McGill: Trans. Clin. Soc. London, 1888, xxi, 52.

[42] Fuller, Eugene: Jour. Cut. and Genito-Urinary Dis., 1895, xiii, 239.

[43] McGowan, Granville: Trans. Am. Urological Assn., 1907, 112.

[44] Judd, E. S.: Penn. Med. Jour., November, 1917, xxi, 72.

[45] Braasch, W. F.: Annals of Surg., 1917, lxv, 615.

[46] Quinby, W. C.: Am. Jour. Med. Sci., March, 1919, clvii, 390.

[47] Young, Hugh H.: Jour. A. M. A., Jan. 11, 1902; 1903, ii, 999.

[48] Proust: Comptes rendus de l'Assoc. Française d'Urologie, 1901.

[49] Freyer: Lancet, 1904, ii, 197.

[50] Stillman, Stanley: Trans. Am. Surg. Assn., 1909, 264.

[51] Bevan, Arthur Dean: Discussion, Trans. Am. Surg. Assn., 1909, 268.

[52] Pilcher, Paul M.: Trans. Am. Urological Assn., Vol. viii, 1914.

[53] Gardner, J. A.: Jour. A. M. A., Nov. 16, 1918, 1036.

[54] Bugbee, H. G.: Trans. Am. Urological Assn., 1917, 94.

Book Reviews.

An International System of Ophthalmic Practice. Edited by WALTER L. PYLE, A.M., M.D. *Medical Ophthalmology* by ARNOLD KNAPP, M.D., Professor of Ophthalmology, Columbia University; Surgeon Herman Knapp Memorial Eye Hospital. Philadelphia: P. Blakiston's Son & Co., 1919.

This well-made book of 480 pages of text aims to give the "relations of ophthalmology, closer or more remote, with every branch of medicine and surgery." The introductory anatomy of the nervous system connected with sight is in coöperation with Marburg of Vienna and is both comprehensive and compact. Next, diseases of the nervous system are taken up and this part is especially valuable. Then the remaining field of medicine and disease, as far as it may affect the eye, is reviewed with satisfactory thoroughness. An amazing amount of information is contained in the volume and arranged in such a way as to be of the utmost use. The last chapter takes up hereditary eye diseases. We shall not soon see a book to displace this one in its field.

The Refraction of the Eye. A Manual for Students. By GUSTAVUS HARTRIDGE, F.R.C.S., Consulting Surgeon to the Royal Westminster Ophthalmic Hospital; Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery to the Westminster Hospital, etc. 110 Illustrations. 16th Edition. Philadelphia: P. Blakiston's Son & Co. 1919.

Of this valuable treatise 38,000 copies have been issued. It is well known to the student of ophthalmology and this new edition, while following the plan of previous ones, has been revised and many additions made. No more practical guide to the beginner in this field exists and a grateful generation of oculists might attest its value.

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"PTOMAINE POISONING" AGAIN REVEALED.

An illuminating instance of the loose way in which the term "ptomaine poisoning" is still used occurred last month in Washington, D. C. Mrs. T., aged 44, suddenly took ill with a chill and fever, soon developed a petechial eruption, indefinite mental symptoms, and died in 18 hours. There were no indications of gastro-intestinal disturbance. The cause of death upon the death certificate was given as "botulism, or ptomaine poisoning." A pure culture of meningococcus from the spinal fluid was obtained by lumbar puncture as well as from the blood, and the case was therefore evidently a fulminating type of cerebrospinal fever.. As soon as the bacteriological examination was completed, the death certificate was corrected by the attending physician. The day before Mrs. T. fell ill, her husband had a spell of nausea and vomiting, which was thought to be "ptomaine poisoning" The attack occurred about five hours after eating a dinner containing spinach. The matter vomited was greenish, which threw suspicion on the spinach. A statement was issued warning against spinach. Subsequent investigation makes it likely that the vomitus contained bile, especially in view of the fact that Mr. T. was subject to spells of this nature, having a chronic dyspepsia.

It is important to remember that in actual cases of food poisoning and food infection, the period of incubation may vary from four to forty hours. In other words, several meals may intervene between eating the food in question and the beginning of the attack. The food vomited may not be, therefore, the food responsible for the trouble. This mistake is common. It was made in the Detroit outbreak of botulism. In one of the cases of this outbreak the vomitus contained corn which was therefore incriminated at the time, whereas the trouble really came from ripe olives eaten the day before

Now that "ptomaine poisoning" is going quite out of style, botulism is becoming the fashion. The symptom-complex of botulism is quite characteristic. The poison is a neurotoxin, and the symptoms are almost all referable to injury of the nervous system. The mind remains clear; there is no fever; symptoms of gastro-intestinal irritation are absent or slight; in fact, obstinate constipation is the rule. Nausea and vomiting may occur, but always as an early manifestation, which soon passes away. Botulism is one of the causes of bulbar paralysis, and must also be differentiated from poliomyelitis and encephalitis lethargica. It should be remembered that botulism, while a serious intoxication, fortunately is very rare, and is almost always associated with home processed foodstuffs. It need not be feared in fresh food or in food that has been recently and thoroughly cooked, for the toxin of botulism is destroyed at 70° C. Even if Mrs. T. had suffered from botulism, the spinach could not have been responsible, for it had been boiled just before the meal. The spinach certainly could not have conveyed the infection of cerebrospinal meningitis.

Food infections due to the Gaertner group of bacilli are exceedingly rare in the United States; outbreaks occur occasionally in England, and more commonly on the Continent. The food responsible for these infections becomes contaminated in one of several ways: (1) the food animal was diseased before slaughter with an infection of one of the members of the Gaertner group of bacilli. This occurs more often in Germany and in other countries where nothschlacht (emergency slaughter) is permitted; (2) food from healthy animals may become contaminated from the hands or instruments of butchers who have just handled an infected carcass; (3) food may be contaminated from a human carrier—this seldom occurs, for human carriers of bacillus are very rarely found; (4) the food may become contaminated with rat or mice feces, for these rodents are susceptible to infection by some of the members of the Gaertner group, and sometimes become bacillus carriers. Opportunity for food to become infected with excrement of mice and rats occurs in the slaughter house, in the butcher shop, in refrigerators, in transportation, and in the home.

Savage, in his recent book on "Food Poisoning and Food Infections,"[1] states that "the term 'ptomaine poisoning' is clearly incorrect, and its retention is unfortunate and misleading as it leads to a faulty conception of the pathology of the condition, and what is worse, to the neglect of the proper methods of investigation and prevention. It is to be hoped that it will speedily be relegated to the limbo reserved for unsubstantiated theories." Chapin, the distinguished health officer of Providence, R. I., states,[2] "there is almost as much nonsense written about 'ptomaine poisoning' as there is about adulteration. 'Ptomaine poisoning' is a popular name for disorders arising from bacterial changes in food. Of such we really know little except that they are not nearly so common as believed." These views confirm those of Jordan, who regards the term, "ptomaine poisoning," as a refuge for etiologic uncertainty; and also of Rosenau and his associates at Harvard who, after three years of study came to the conclusion that there is no such thing as "ptomaine poisoning."

The attending physicians in the Washington case deserve commendation for bringing in the aid of the laboratory to help unravel a clinical puzzle. In the recent Brooklyn cases diagnosed botulism, an autopsy was not obtained, and bacteriological information is wanting: the diagnosis will therefore remain uncertain. The literature on the subject of "ptomaine poisoning" is clogged with bazarre mistakes. Food poisoning in this country is rare, and the diagnosis is seldom justified unless other possibilities are considered and eliminated.

THE FELLOWSHIP OF MEDICAL AND POST-GRADUATE MEDICAL ASSOCIATION IN LONDON.

Some account of the recent progress of the Fellowship of Medicine may be of value to the many American medical men who worked under the auspices of the new body during the summer of 1919, as well as to those who are contemplating an early visit to Europe.

The Fellowship was founded in July, 1918, at a meeting convened by Lord Eustace Percy with a view to establishing a body which might unite the British profession with their over-seas brethren in closer bonds of sympathy, Sir William Osler acting as President to the time of his death. During the last twelve months the organization of the Fellowship has been quietly proceeding, and the many opportunities for post-graduate study offered by London are being coördinated and added to. London and Greater London together comprise a population of over 10,000,000 persons, thus affording an amount of clinical material which for variety of interest cannot be surpassed by any other great city. The traditions of the London medical school and the standard of their teaching are second to none. For reasons, however, which are to some extent explained by national characteristics, the requirements of the medical post-graduate had never been adequately met. An unfortunate tradition had been established that medical London was inhospitable to the stranger. This tradition, which was true only in part, is now a legend of the past.

The arrangements in 1919 were frankly of an emergency nature; but, rudimentary as they were, two truths were driven well home. London could give post-graduate teaching of the highest distinction, and the medical men of the metropolis were ready to welcome very heartily their professional brethren from overseas. Today graduates are arriving in increasing numbers from all parts of the world. The American medical man, when he reaches London, will soon find himself at home. He possesses the advantage of having several centres where he can receive general advice and direction from his own countrymen as well as social and professional introductions which will make his path smooth. At the offices of the Fellowship of Medicine he can obtain detailed information with regard to every branch of medical and surgical study, particularly in relation to clinical work and intensive courses. If he subscribes to the monthly ticket of the Fellowship practically every door in medical London is open to him, and small additional fees will admit him to special lectures if they are not already free. American medical men who are considering the desirability of study in Europe are invited to apply for a post-free copy of the weekly Bulletin of the Fellowship, which provides a daily program of the work in the wards and out-patients' departments, together with a syllabus of each special course and list of all current lectures. The Fellowship also collates information of post-graduate work in the United Kingdom and in Paris, where a permanent branch is in course of being established. Correspondents should state the subjects they are interested in, and announcements of forthcoming arrangements will be forwarded from time to time. The offices of the Fellowship of Medicine and Post-Graduate Medical Association are at present in the House of the Royal Society of Medicine (by courtesy of the Royal Society of Medicine), No. 1 Wimpole Street, London, W.1., England.

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[1] Savage: "Food Poisoning and Food Infections," Cambridge University Press, 1920, p. 118.

[2] Chapin: Jour. A. M. A., lxix, 2, July 14, 1917, p. 90.

ORGANIZATION OF A MASSACHUSETTS CENTRAL HEALTH COUNCIL.

There has been organized recently in Massachusetts by the state-wide health agencies, a Massachusetts Central Health Council, for the purpose of promoting coöperation between the various health activities throughout the state. It is expected that by means of this organization duplication and overlapping of duties may be eliminated and that the financial and legislative needs of health agencies may be supported with increased efficiency.

The initial activities of the Massachusetts Central Health Council will be of an advisory nature. One of the first steps to be taken will be the outlining of the programs and problems of each of the constituent organizations, thus making it clear to each organization what the others are doing and propose to do. It is hoped also that coöperation and counsel may help to clarify the present confusion in regard to the respective duties of health officers and volunteer agencies. In the new organization are represented public health nursing, child welfare, medical and dental groups, tuberculosis, cancer, state and local health officials, the American Red Cross, and the American Public Health Association. Dr. Enos H. Bigelow, Framingham, is President of the Council; Mr. Arthur G. Rotch, American Red Cross, Boston, Vice-President; and Mr. A. W. Hedrich, American Public Health Association, Boston, Secretary-Treasurer.

MEDICAL NOTES.

Rockefeller Gift to University College, London.—The sum of six million dollars has been offered by the Rockefeller Foundation to University College and its Hospital and Medical School in London, to be used for teaching and research work. The gift involves certain conditions, including the building of a new obstetrics unit, a biochemical laboratory, the rebuilding of some of the hospital buildings, and the establishment of various endowments. In addition, a new institute of anatomy is to erected, which it is hoped may be the finest in the world. The hospital must raise an additional sum of one hundred thousand dollars annually to carry out the program. The institution depends for support upon voluntary contributions. The hospital has accepted its share of the gift, but the college must obtain the sanction of the London University, in which it was incorporated in 1907, before accepting.

A statement issued by Dr. George E. Vincent includes the following extracts:

"The University College and Hospital School have been selected because of the physical unity of the hospital and medical school buildings and the close relationships existing between the University College, which provides the laboratory courses, and the University College Hospital and Medical School, which furnishes clinical teaching.

"The authorities of the schools, supported heartily by the faculty, have organized full-time clinical 'units' in such a way as to combine the care of patients and research with the teaching of students. This feature of the work especially influenced the Foundation to decide to assist in furthering a plan which it is believed will have an important effect upon the development of British medicine.

"The Foundation has a special interest in the proposed Institute of Anatomy because thus far under British auspices a true university department which combines both teaching and research in the fields of anatomy, histology, and embryology has not been developed. It is believed that such an institute, by unified efforts in these three branches of anatomy, is of prime importance not only to the teaching of the medical student but also for the progress of anatomy, particularly on its research side."

Nutrition Clinics in Cleveland.—The Cleveland Nutrition Clinics have been organized recently in association with the Nutrition Clinics for Delicate Children in Boston. The activities of the new society are directed especially toward the public schools, and training will be given under its auspices next year to the students in the city normal school.

An intensive course for nutrition workers had its beginning June 21, in the Cleveland Summer School of Education, of which Dr. Ambrose L. Suhrie is dean. Dr. Wm. R. P. Emerson was present during the first week and emphasized the importance of training physicians for nutrition work. The two following weeks stress was laid upon the training of nutrition workers. Among the instructors is Miss Mabel Skilton of Boston, who has charge of field work in the national association, and Mrs. Ira Couch Wood, director of the McCormick Memorial Fund in Chicago.

In planning for an extensive campaign in the schools the coming year a number of workers from Cleveland spent several days in Boston recently. Among them were Dr. L. W. Childs, director of medical work for the Cleveland Board of Education; Dr. H. C. Mabley, in charge of open air schools, and Miss Mabel Southard, head nurse in the department of school inspection. They visited nutrition clinics at the Berkeley Infirmary, the Massachusetts General Hospital, and the Elizabeth Peabody House, and gave considerable time to the pioneer nutrition experiment undertaken by the School Committee at Walpole, where every child in the schools has been weighed and measured and clinics have been provided for all children in need of care. This work is in charge of Miss Mae Chamberlain, formerly of the Bureau of Child Hygiene in New York. Miss Chamberlain returned last fall from service in France and took training for nutrition work in the Boston class.

Tuberculosis Research Fellowship.—To encourage study of the means for the prevention and cure of tuberculosis, the Hennepin County Tuberculosis Association of Minneapolis, Minnesota, announces that it has set aside a fund for the support of a tuberculosis research fellowship in the Graduate School of the University of Minnesota. The candidate for the fellowship must be a graduate of a Class A medical college. He will be expected to devote himself to research in some problem concerned with the causes, prevention, or cure of tuberculosis. No teaching or other service will be required. The fellowship yields $750 the first year and progressively increasing amounts to be appropriated for the second and third years as conditions warrant. Inquiries and requests for application blanks should be addressed to the Dean of the Graduate College, University of Minnesota, Minneapolis, Minn.

Yale University and the New Haven General Hospital.—The sum of one million dollars has been given by the General Education Board to Yale University for the development of the New Haven General Hospital through the medical school of the university. When the Yale Medical School became affiliated with the New Haven Hospital a few years ago a gift of five hundred thousand dollars was made by the General Education Board. The hospital is to be made a full-time institution, and members of the staff, many of whom are members of the Yale Medical School faculty, are to give all their time to the hospital and give up outside practice.

British and French Physicians in the United States.—The following British and French physicians attended the meeting of the American Medical Association at New Orleans and have been visiting the leading medical centers of this country as guests of the National Board of Educational Examiners of the United States:

Sir Humphrey D. Rolleston, Royal College of Physicians of London; Col. H. J. Waring, Royal College of Surgeons of London; Dr. Norman Walker, Royal College of Physicians of Edinburgh and the Royal Faculty of Medicine and Surgery of Glasgow, and Professors Gustave Roussy and E. E. Desmarest, of the University of Paris.

Honor for Dr. Aldo Castellani.—The honor of Officer of the Legion of Honor has been conferred by the president of the French Republic on Dr. Aldo Castellani, of the London School of Tropical Medicine, in appreciation of his method of combined typhoid-paratyphoid and enteric-cholera vaccination.

New Treatment for Leprosy.—The United States Public Health Service has reports of what appears to be a cure for leprosy, it has been announced by Surgeon-General Hugh S. Cumming. Thus one of the world's most dreaded maladies regarded as a hopeless and incurable scourge of humanity since early history, would seem to have been conquered at last by the Public Health Service in the leper colony in the Hawaiian Islands.

For some years the belief has been gaining ground that leprosy could be cured, and encouraging progress was made by several investigators. The starting point for this study was the observation that now and then the course of disease appeared to be favorably influenced by treatment with chaulmoogra oil. The treatment, however, was attended with many difficulties and could not be carried out in all cases. At this point the Public Health Service enlisted the coöperation of Prof. L. E. Dean, head of the chemical department of the College of Hawaii, and president of that institution, suggesting that attempts be made either to isolate the active constituent of this drug, or to devise means for making its continued administration feasible. The latter has been accomplished by preparing what is known as an "ethyl ester" from the chaulmoogra oil. The treatment has been carried on at the Leprosy Investigation Station at Kalihi, Hawaii, the work being directed by Dr. J. T. McDonald, director of the station. The results of the treatment thus far have been so satisfactory that lepers come willingly for treatment, a recent inspection by Hawaiian health authorities failing to disclose a single secreted case of leprosy. Following a course of treatment, extending over about a year, 48 lepers, treated according to the new method, were paroled in October, 1919. Up to now they have remained free from disease. At the present time the treatment has been administered only at the receiving station but it is hoped to provide facilities for the treating also of lepers in the leper colony at Molokai.

Surgeon-General Cumming's announcement relates to lepers who have been treated by the new method and have been under observation for a considerable period. Moreover, the decision as to apparent cure has in the case of each patient been officially determined, not by officers of the Public Health Service, but by a special parole board, which alone has authority to discharge a patient from custody.

The Public Health Service is now conducting a very careful study of the treatment, making detailed records of all the cases and taking photographs of the lesions once a month. Details concerning the treatment will be published later.

BOSTON AND MASSACHUSETTS.

Convention of the Northeastern Massachusetts Dental Society.—The Northeastern Massachusetts Dental Society held its annual convention on June 15, 16, and 17 at the New Ocean House, Swampscott. Dr. A. A. Nouel, Professor de Clinica Dental, de la Universidad Central de Venezuela, delivered an address on "Electrical Modalities for the Treatment of Pyorrhea," and a clinic was given on the metallizing of dental pulps and nerve canal treatment with high frequency electric currents. Other speakers made addresses on the following subjects: Dr. P. B. Laskey of Marblehead, "Something of Interest"; Dr. John A. Billings, Rockland, "Amalgam Restorations"; Dr. C. B. Vaughn, Boston, "Pyorrhea"; Dr. Charles S. Campbell Salem, "Comparative X-ray"; Dr. W. H. Pepin, Lowell, "Orthodontia Appliances"; Dr. Edmund A. Jones, Medford, "Technic of Boxing and Using Goslee Contraction and Expansion of Solder and How to Eliminate the Same."

Speakers at the dinner on June 15 included William Rice, dean of the Tufts Dental School; Eugene H. Smith, dean of the Harvard Dental School, and Harold DeWitt Cross, superintendent of the Forsyth Infirmary. An entertainment and dance were given in the evening.

For the coming year the following officers were elected: President, Dr. H. E. Davis of Lowell; vice-presidents, Dr. E. W. Marvin of Lynn, Dr. M. E. Davenport of Beverly, Dr. F. E. Jeffrey of Salem and Dr. W. A. Peppin of Lowell; secretary, Dr. Henry I. Yale of Peabody; treasurer, Dr. T. F. Parks of Wakefield.

Week's Death Rate in Boston.—During the week ending July 3, 1920, the number of deaths reported was 184 against 155 last year, with a rate of 11.87 against 10.15 last year. There were 29 deaths under one year of age against 21 last year.

The number of cases of principal reportable diseases were: Diphtheria, 46; scarlet fever, 39; measles, 58; whooping cough, 71; typhoid fever, 2; tuberculosis, 36.

Included in the above were the following cases of non-residents: Diphtheria, 5; scarlet fever, 6; measles, 2; whooping cough, 1; tuberculosis, 4.

Total deaths from these diseases were: Diphtheria, 6; scarlet fever, 1; whooping cough, 1; tuberculosis, 4.

Total deaths from these diseases were: Diphtheria, 6; scarlet fever, 1; whooping cough, 5; typhoid fever, 1; tuberculosis, 13.

Included in the above were the following non-residents: Diphtheria, 3; whooping cough, 1; tuberculosis, 2.

The Eugene H. Smith Scholarship Fund.—At the forty-ninth annual dinner of the Harvard Dental Alumni Association held at the Copley-Plaza Hotel in Boston, Dr. Henry W. Gillet of New York presented to Dr. Eugene H. Smith, who has served as Dean of the Harvard Dental School for twenty-five years, an album containing the signatures of the first subscribers to the scholarship fund which is being raised in his honor. Contributions amounting to twenty-five hundred dollars have been pledged to the fund. Among the speakers who paid tribute to Dean Smith and his work for the college and for dental education were Dr. Charles W. Eliot, President Emeritus of Harvard University; Dr. Frederick B. Moorehead, Dean of the Dental Department of the University of Chicago; Professor Walter Bradford Cannon of the Harvard Medical School, and Dr. William Rice, Dean of the Dental Department of Tufts College.

The following officers of the Harvard Dental Alumni Association were elected for the coming year: President, Samuel T. Elliott, '01; Secretary, James T. Crofwell, '99; Treasurer, Roger B. Taft, '08; Trustee of Life Membership Fund, Lyman Bigelow, '86; Member of Executive Committee, H. L. Andrews, '06; Committee on Nominations and Election of Officers, Fred A. Beckford, '06; Walter A. Davis, '01, and J. Arthur Furbish, '05.

Drug Price Changes.—The Drug and Chemical Markets have made the following announcements for the week of June 24: Declines in prices have outnumbered the advances in the crude drug market and the losses give an appearance of a depression in the market. Shipments from abroad have been large, and domestic receipts have increased, but the collections are not overabundant. Stocks of buchu in the New York market have been exhausted and none is to be had at Cape Town. Spanish saffron is easier. Chamomile flowers are arriving in large quantities and prices are lower. High dried rhubarb has declined. Senega root is easier. Agar agar is lower.

Glycerine is strong. Quicksilver is lower in New York than in London. Caffeine alkaloid is scarce and prices are firm. Quinine is weak, owing to large arrivals. Citric and tartaric acid are lower. Caramel is scarce and in active demand. The general situation in fine chemicals is steady with little trading.

Naphthalene is scarce and high. Dimethylaniline is firm. Aniline oil and salt continue weak.

Essential oil prices declined. Far East products are lower with the exception of sandalwood oil. Anise and cassia oil are weak and clove oil is easy. The Messina essences are quiet.

The vegetable oil market reported reductions. Cottonseed oil weakened slightly. Cocoanut and palm oils are lower. Soya bean oil fluctuated and finally regained some of the loss of the week before. Linseed oil is weaker.

Bleaching powder and caustic soda are strong and slightly higher. Salt cake is scarce and prices have been advanced. Sodium hyposulphite is higher Ammonium sulphate and potash muriate are lower The general situa tion in heavy chemicals is practically unchanged.

DEPARTMENT OF PUBLIC HEALTH.—Announcement has been made of the following changes in personnel in the Massachusetts Department of Public Health:

Dr. M. J. Rosenau has resigned as Director of the Division of Biologic Laboratories, effective June 1, 1920, but will continue to be connected with the Department as Consulting Pathologist and Bacteriologist.

Dr. G. Benjamin White has been promoted from the position of Assistant Director of the Division of Biologic Laboratories to Director of the Division of Biologic Laboratories, commencing June 1, 1920.

Dr. Stanley H. Osborn has resigned as Epidemiologist with this Department, effective May 1, 1920, to accept a position as Director of the Division of Preventable Diseases and Deputy Commissioner of the Connecticut Department of Health.

Dr. James E. Henry has been temporarily appointed as Epidemiologist, commencing June 1, 1920.

BOSTON STATE HOSPITAL TRAINING SCHOOL FOR NURSES.—The graduating exercises of the Boston State Hospital Training School for Nurses were held for the class of 1920 on June 25 at the Chapel of the Boston State Hospital, East Group. An address was delivered by Dr. Elisha H. Cohoon, Superintendent of the Medfield State Hospital. Eleven young women and one man were graduated. The exercises were followed by a reception and dancing.

NEW ENGLAND NOTES.

WAR RELIEF FUNDS.—The New England branches of the French Orphanage Fund and the Italian Fund have announced the following contributions:

French Orphanage Fund	$602,171.71
Italian Fund	329,494.21

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Obituary.

CHARLES DANIEL McCARTHY, M.D.

DR. CHARLES DANIEL MCCARTHY died at his home in Malden, June 22, 1920, aged 59 years.

Dr. McCarthy's death was due to a stroke of apoplexy which he suffered June 17, soon after arriving at the Lynn Hospital, where he was to perform an operation. He was removed from the hospital to his home the following day, but did not regain consciousness after he was stricken.

Charles D. McCarthy was born in Lee, in the Berkshires on July 3, 1860, and was the son of John D. and Jane (Ferguson) McCarthy. He received his education in the public schools in Lee and at Holy Cross College, of which he was a graduate with the class of 1880. He then took up his medical studies at New York University, graduating M.D. in 1882, and later went to Malden. He had become known as a physician of marked ability and as a surgeon of recognized skill and authority.

Dr. McCarthy was one of the founders of the Malden Hospital, and he was its senior staff surgeon. He served on the Board of Health in Malden from 1886 until 1907, in which latter year he was elected mayor. He served for only a single term, however, and declined a reëlection because he preferred to give his whole time to his profession. When Malden celebrated her 250th anniversary Dr. McCarthy was chairman of the emergency committee. He was sought as an orator for many public occasions.

He joined the Massachusetts Medical Society in 1886; at one time he was president of the Malden Medical Society. He was one of the founders and first grand knight of the Santa Maria Council of the Knights of Columbus, and belonged to various other similar organizations. He was a director of the First National Bank of Malden, also of the Malden Coöperative Bank and of the Malden Morris Plan Bank.

Dr. McCarthy was married on February 13, 1890, to Mary Elizabeth Sheehan, by whom he is survived, as he is also by a son, Dr. Charles D. McCarthy, Jr., and a daughter, Mrs. Margaret McCarthy Stephanian of Malden. The son, Dr. McCarthy, Jr., was in war service overseas, and won the Cross of the Legion of Honor. A surviving brother of Dr. McCarthy is Dr. John C. McCarthy of New York.

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RECENT DEATH.

DR. CHARLES CARSON MESSER, a Fellow of the Massachuetts Medical Society, died at his home in Turner's Falls, May 20, 1920. He was born in Springfield, N. H., Dec. 25, 1853, was graduated at Dartmouth Medical School in the class of 1880, and had practised in Turner's Falls since 1883. He was a member of the American Medical Association.

The Boston Medical and Surgical Journal

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Original Articles.

THE DIAGNOSIS OF ACCESSORY SINUS DISEASE CAUSING LOSS OF VISION.*

By Leon E. White, M.D., Boston.

The anatomy of the posterior sinuses and the relations of the optic nerves have been thoroughly investigated. The clinical histories of numerous cases have been reported and many theories advanced as to the etiology. The pathological findings, while not as complete as we would wish, seem to indicate three types of optic neuritis,—

1. Those due to a direct spreading of the inflammation to the sheath of the optic nerve from the foci of infection;
2. Those due to the toxemia from infection in the sinuses; and
3. Those due to hyperplasia. *

It is not possible in all cases to determine definitely the type. Pus and polypi when present can usually be seen, but the hyperplastic type varies so little from the normal when the middle turbinate is not involved that macroscopically or even microscopically the diagnosis is most difficult. Hyperplasia has been defined by Vail as a rarefying osteitis associated with inflammatory swelling and fibrous thickening of the mucous membrane lining the accessory sinuses. It is brought about, according to Delafield and Prudden, by long continued hyperemia. That many obscure cases of loss of vision come from disease in the accessory sinuses and go on to optic atrophy, cases in which a correct diagnosis at the commencement of the neuritis might have saved the vision, is my excuse for again calling attention to this subject.

Many inquiries have been made as to what findings warranted the opening of the sinuses in optic neuritis. The ophthalmologist who sends a patient with sudden loss of vision, expects the rhinologist either to find or rule out disease in the sinuses. Where pus or polypi can be demonstrated or where there is marked blocking of the sinuses by a deflection of the septum or by hypertrophied turbinates, this is an easy matter, but only too frequently the nose appears normal. My second case was of such a nature. Everything was negative except the x-ray, which showed some anatomical abnormality in the sphenoids. Dr. William J. Daly on referring the case stated that optic atrophy would result unless the pressure on the nerve could be relieved at once, and it was at his most earnest solicitation and not on the nasal findings that I operated. The relief was so speedy and so evidently due to the operation that I became deeply interested and read practically everything to be found on the subject. Since then many cases have been seen. Some of these had gone on to optic atrophy, others were due to pituitary disease, but many were acute and the relief following the opening of the sinuses in such was most remarkable. In addition to the ophthalmological examination by the men who referred the cases practically all underwent medical, neurological, dental, Wassermann, and x-ray examinations. The danger of delay in making a correct diagnosis is well illustrated by Case 4. On the first examination a week after the onset of his trouble the vision was 20/50 right and 20/20 left. This dropped within six weeks while he was under investigation and before his consent to an operation could be obtained, to 2/200 right and shadows left, and the nerve heads turned white. If his sphenoids could have been opened before the development of the atrophy his vision would probably have been saved, especially as marked pathology was found in the sinuses when he was operated on at the end of the six weeks. When toxemia is suspected, its origin, be it teeth, tonsils, accessory sinuses, intestinal autointoxication, alcohol, tobacco, lues, etc., should be first investigated, but time is so very precious that needless delay is criminal. This investigation should not consume more than 48 hours. The possibility of pituitary disease must also be considered. To illustrate the necessity of excluding this, let me refer to a case which was sent to determine if anything further could be done for his progressive loss of vision. He had undergone a complete bilateral ethmoid and sphenoid exenteration. One glance at the enlargement of the pituitary gland as shown on the x-ray plate revealed the origin of the blindness. That there may be marked hyperplasia of the accessory sinuses with nothing in the nose to suggest it, has been demonstrated in several of the following cases. To give you the findings in these cases before operation, the condition found on operation and the final results, has seemed the most logical way of presenting this subject.

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* Read before the New England Otological and Laryngological Society, on February 3, 1920

In Case 1 of chronic unilateral retrobulbar neuritis, one year's duration, with vision for fingers, pus was seen about the sphenoid in sufficient quantity to warrant advising its opening. The advice was not followed and the eye became permanently blind and involvement of the ethmoids followed.

Case 2 has already been mentioned. It was one of bilateral retrobulbar neuritis of one week's duration, vision 10/100 with slight blurring of the edges of both discs. Nasal examination negative. X-ray showed a difference in the sphenoids. The middle turbinate was removed and the sphenoid opened, no pus but hyperplastic tissue found. Complete recovery within two weeks.

Case 3 was one of acute unilateral retrobulbar neuritis of three days' duration with vision 20/40 following a severe attack of influenza. There was slight haziness of the margins of the disc and dilatation of the veins. The septum was moderately deflected and an enlarged and swollen middle turbinate completely blocked the superior meatus.

The nasal condition warranted the removal of the middle turbinate.

Case 4 has been mentioned.

In Case 5, of acute bilateral optic neuritis of two weeks' duration, the nasal examination was practically negative, as were also the physical, neurological, Wassermann, and x-ray. The right eye showed the disc pushed forward about two diopters with exudate on and about it. The retinal veins were enlarged and tortuous. The left disc showed marked neuritis but no swelling. Dr. Quackenboss, who saw the case in consultation, felt that unless there was immediate relief from the pressure, optic atrophy would result, so in spite of negative findings, the right middle turbinate was removed and the right sphenoid opened. The tissue was somewhat thickened, seemingly hyperplastic. Improvement commenced within 24 hours and although the right nerve remained somewhat paler than the left, vision eventually returned to 20/20.

Case 6, unilateral retrobulbar neuritis of five days' duration. Eye sensitive to pressure, marked blurring of edges of disc, light perception only. The septum was deflected to the left and the middle turbinate greatly swollen, evidently obstructing the sinuses. Nasal findings warranted the resection of the septum and removal of the middle turbinate. The sphenoid, owing to an infection, was not opened until some weeks later so that the vision did not return quite to normal—20/20—and there was slight pallor of the nerve.

Case 7 was one of bilateral optic neuritis of two weeks' duration with practically complete blindness in both eyes. The fundi showed marked neuritis, swelling of the disc and dilatation of the veins. Nasal examination was negative, as were also the Wassermann, neurological, x-ray, and physical. In spite of the negative findings, both middle turbinates were removed and the sphenoids opened. This also was a case of hyperplasia. Sight commenced to improve within 24 hours and practically normal vision was eventually obtained, although there remained a slight pallor of both discs.

Case 8 was also one of bilateral optic neuritis of six weeks' duration, with blurring of both discs and marked neuritis right. Pituitary disease was suspected, which accounted for the delay in referring the case, but the neurological and x-ray examinations were negative. There was a slight deviation of the septum, otherwise the nose was negative. Having excluded practically everything but accessory sinus disease the right middle turbinate was removed and the right sphenoid opened. Although this case was of six weeks' duration, the vision returned rapidly, 20/20 left and 20/30 right in nine days. A diseased molar was later extracted and the antrum which had become infected from the tooth was cleaned out. Normal vision four months after operation.

Case 9 was most unusual as the patient entered the infirmary for exophthalmos of the left eye; it was pushed forward and outward but the sight was not impaired. Fogginess came on two weeks later and the fundus showed a commencing choked disc which grew rapidly worse so that within four or five days the vision dropped to 20/200. The physical, neurological, x-ray, Wassermann, and nasal examinations were all negative. The seriousness of the case warranted the removal of the left turbinate and the opening of the sphenoid and posterior ethmoid. Vision commenced to improve almost immediately and was normal in one month. Then pain and blurriness developed in the other eye. The fundus showed a marked papillitis and the vision dropped to 20/200, so that side of the nose was operated upon. In eight days the vision was normal. Later, following a severe cold, there was blurriness of the left disc, the first one affected, and the vision dropped to 20/30. Feeling that some infected cell had been overlooked in the first operation, all the posterior ethmoids were exenterated, the opening into the sphenoid enlarged and a permanent opening made into the antrum, which was found to be filled with pus. Vision became normal within a week. This case is unique as the optic neuritis of the left eye developed while the patient was under treatment for the exophthalmos on that side. The neuritis in the right eye came on some weeks after that in the left had subsided. Then there was recurrence of the neuritis in the left eye. This case seems to demonstrate that the optic nerve, while not in relation to the other accessory sinuses, may yet become involved from the toxemia of the infection,—the antrum in this patient.

In Case 10 there was neuroretinitis and choroiditis of the right eye of three months' duration, with complete loss of vision. The x-ray, Wassermann, neurological, nasal, and physical examinations were all negative. The operation was undertaken to determine what effect the removal of the middle turbinate and the opening of the accessory sinuses would have on the dilated veins of the fundus and the severe pain about the eye. This pain was of such intensity as to require large doses of acetylsalicylic acid almost hourly. Vision unimproved but complete relief from the pain. Granulations and pus were found in the ethmoids.

Case 11 was one of axial neuritis of eight months' duration. There was a large central scotoma for colors. Soft polypoid tissue was found in the region of the left posterior ethmoids, bleeding freely at touch and most sensitive to pressure even after thorough cocainization. Although the possibility of malignant disease was considered, it was not until the x-ray was seen that this suspicion was confirmed. The plate showed marked erosion in the sella turcica region. The clinoid processes were obliterated, ethmoid and sphenoid moderately obscured. No operation was attempted. The patient died some two weeks later. An autopsy showed that the sphenoid bone was almost completely pervaded by a round cell sarcoma. It had broken through the pharynx over a small area and extended into the greatly enlarged pituitary body. Although some of the polypoid tissue in the nose was removed the pathological report was negative. Dr. Verhoeff made sections of the optic nerves and tracts and found that the nerve showed no evidence of atrophy or degeneration, although there had been marked loss of vision (20/200) for eight months. Therefore, he said, could the pressure have been removed, the vision would probably have returned. This leads us to hope to relieve cases of some months' standing, provided the nerve has not atrophied.

Case 12, unilateral neuritis of four months' duration, vision 20/70, marked swelling of disc, borders completely obliterated, retinal veins moderately full, tortuous and obscured at disc borders. There was a posterior deviation of the septum which crowded the left middle turbinate so as to obstruct the sphenoids and posterior ethmoids. The tissue in this region was distinctly boggy and mucopurulent secretion was seen about the middle turbinate. The x-ray plates showed left anterior and posterior ethmoids obscured and sphenoids rather hazy. These findings warranted the removal of the middle turbinate and the cleaning out of the ethmoids and sphenoid. The improvement was slow and vision was not quite normal when last seen.

Case 13 was one of bilateral optic neuritis of four months' duration, accompanied by severe pain in the head, dating back 15 years, but much worse the past six months. Vision 20/200 and steadily failing. High myopia. Both discs were irregular in outline and white on temporal sides. Nasal examination showed marked deflection of the septum and hypertrophied middle turbinates. Physical, dental, and neurological, x-ray, and Wassermann, negative. The findings in the nose were sufficient to warrant the removal of both middle turbinates and the opening of both sphenoids. The right sphenoid was filled with thick gelatinous secretion. The left contained thick mucus and reddened areas. The progress of the neuritis was checked, the vision improved slightly and the pain relieved.

Case 14, a child of five years, had bilateral neuroretinitis with total loss of vision for three weeks. The fundi showed stellate exudates and dilated veins. Neurological, x-ray, physical, and Wassermann all negative. There was a slight deviation of the septum high up and both middle turbinates were swollen. While this finding was comparatively slight, the fact that the case was treated a week without relief warranted the removal of the middle turbinates and the opening of the ethmoids. Light perception two days after the operation. In six weeks the child could count fingers at 20 feet, although there remained some pallor of the discs.

Case 15 was one of bilateral papillitis of four weeks' duration. Vision for fingers, one foot left and 20/40 right. Both discs were indistinct in outline, the left more so than the right. Physical, neurological, and Wassermann examinations negative. The x-ray showed right antrum and posterior ethmoids obscured. The left middle turbinate was somewhat enlarged and secretion could be seen beneath it. The x-ray and nasal examinations gave sufficient grounds for the usual operation. Pus under some pressure was found in the sphenoid. The patient improved but the final report was not obtained as he shortly returned to his home in another state.

Case 16 was one of unilateral retrobulbar neuritis with some optic atrophy. There had been progressive loss of vision for two years. Within a year it had dropped from 20/50 to 20/200. The x-ray, Wassermann, neurological, dental and physical examinations were negative. There was marked deviation of the septum to the affected side and the middle turbinate was tightly wedged between it and the outer wall, sufficient grounds, it seemed, for the removal of the turbinate and the opening of the sinuses. The mucous membrane lining these cavities was considerably thickened, quite evidently a case of hyperplasia. Slight improvement followed the operation.

Case 17, acute bilateral neuritis of one week's duration, vision 20/30 right and 20/100 left. Marked papillitis of each disc and general edema of the retina. Both middle turbinates were hypertrophied, the left especially obstructing the sphenoid. This was removed and the left sphenoid and posterior ethmoid opened; thickened tissue, but no pus. Vision returned rapidly and was normal in 5 weeks.

The following cases have not been reported:

Case 18, Mr. A. W. M., 36 years of age, was referred by Dr. Quackenboss on May 24, 1919, with diagnosis of unilateral retrobulbar neuritis of four weeks' duration, vision 20/100, slight pallor on temporal side of disc. Dr. Quackenboss feared that the condition was one of primary optic atrophy as the vision had failed rapidly in the week he was under observation.

The patient had a severe cold with pain through the forehead a week before the onset of the haziness. The usual examinations were negative. The septum was deflected to the opposite side, but the turbinate on the affected side was enlarged and especially obstructive. The position and size warranted its removal and the usual opening of the sinuses. Thickened tissue was found—probably a case of hyperplasia. Recovery was rapid. Two weeks after operation vision was 20/30 and eventually became normal, although there remained slight pallor of the disc.

Case 19: Miss B. F., 60 years of age, was referred by Dr. C. F. Worthen on September 5, 1919, with diagnosis of acute unilateral optic neuritis of three weeks' duration, with vision fingers at three feet. The patient's other eye had been practically blind for some years. Fundus showed retinal veins engorged and disc moderately choked. It suggested Bright's disease but the urine was negative, as were the other usual examinations. There was, however, marked hypertrophy of the turbinate on the affected side, evidently obstructing the accessory sinuses. The findings in the nose warranted the usual operative procedure. The turbinate was cystic and the linings of the cells were somewhat thickened but did not contain secretion. Eleven days after the operation the patient had a rather severe hemorrhage from the middle turbinate region and was greatly exsanguinated, but in spite of this, the vision continued to improve. When she left the States some six weeks later, it was 20/70 and the disc appeared normal.

Case 20: Mr. G. G. P., 67 years of age, was also referred by Dr. Worthen on October 1, 1919, with diagnosis of chronic bilateral retrobulbar neuritis of four months' duration. The vision, which was 20/100 right and 20/70 left, had been slowly failing. The right fundus showed marked congestion. The nerve was hyperemic and the blood vessels dilated. Tobacco was suspected and after its discontinuance the vision began to improve slowly, so that when he was examined no operation was advised. Cocaine about the middle turbinate and hot irrigations caused a much more rapid improvement in his vision. When seen three weeks later, it was nearly normal and the congestion of the fundus had almost entirely disappeared. The patient remarked that every time he irrigated his nose it improved his eyesight and lessened the fogginess.

Case 21: Miss M. McG., 48 years of age, was referred by Dr. P. H. Thompson on November 13, 1919, with diagnosis of chronic bilateral retrobulbar neuritis. The trouble was of nine months' duration in one eye, vision fingers at four feet, and in the other the vision, which had been failing for three months, was 20/70. History of severe pain extending through eye to the occiput and roaring in the ears. The medical and x-ray examinations were negative. Dr. Coriat, the neurologist, reported that the case was probably one of atypical multiple sclerosis. Both middle turbinates were enlarged and obstructing. A diagnosis of probable disease in the posterior accessory sinuses was made and it was felt by Dr. Thompson and myself that these sinuses were the chief factor in the loss of vision, especially as multiple sclerosis itself has been claimed by Shumway, Stark, Parsons, Aurbach, and Brandt to be due to the absorption of toxins from the sinuses. The usual operation was accordingly performed on both sides. The pressure in the head and the roaring in the ears were entirely relieved. There was also a marked improvement in the visual and color fields. The case is still under observation.

Case 22: Mrs. H. B. M., 31 years of age, was referred by Dr. Derby at the Infirmary on November 26, 1919, with diagnosis of acute unilateral retrobulbar neuritis of seven weeks' duration. Following a severe cold, the right eye became blurry and at the end of the week was totally blind. There was considerable pallor of the nerve. The usual examinations all negative. The middle turbinate on the affected side was enlarged and obstructive. Other probable causes having been eliminated, the turbinate was removed and the posterior sinuses opened. In two days fingers could be made out close to the eye. The improvement, however, was only transitory. The pallor of the nerve increased and when discharged two weeks after the operation there was not even light perception. This case well illustrates how quickly the vitality of the nerve can be destroyed.

SUMMARY.

In seven the nasal examination was negative (Cases 2, 4, 5, 7, 8, 9, 10).

In six the x-ray findings were positive (Cases 2, 3, 4, 11, 12, 15). Negative findings, let me add, by no means contraindicate an operation. So many medical men feel that a negative x-ray rules out accessory sinus disease that I wish to especially emphasize the point that it does *not* necessarily do so, as these cases well illustrate. This is especially so in hyperplasia as only two of the 13 cases showed any x-ray findings whatsoever.

The middle turbinate was removed in all the operated cases and the sphenoid opened in all but one (Case 3).

The posterior ethmoid cell is at present opened as a matter of routine. Unless suspected of infection, the other accessory sinuses are not disturbed. The complete ethmoid exenteration does not in most cases seem necessary.

In this review it has not been possible to give much pathology. Many specimens from the hyperplastic cases have been sent to the laboratory but the findings have been practically nil. As Dr. Verhoeff, the pathologist, says, the specimens are more or less traumatized in removal, and in decalcifying them, whatever changes that may have occurred seem to be destroyed. In other words, the changes that take place in the sinuses are so slight and elusive that it is practically impossible to detect them. In examining the noses in the later cases turbinates that might by their position or size prevent drainage have been especially noted. Whenever it has not been possible to pass a small cotton stick between the turbinate and the ethmoidal wall after cocainization, it was felt that they might be obstructive. The changes to be expected are only slight and I should not hesitate to operate upon a perfectly normal looking nose, if the symptoms were those of pressure on the nerve, after having reasonably excluded other possible causative factors.

Let me quote from Sluder's book Dr. Jonathan Wright's views on the pathology of hyperplasia:—

"It would probably be difficult," he says, "to find an adult individual in temperate or cold climates who does not present an example of this bone change within his nasal chambers, which we have a right to call pathological. It is only exceptionally that the symptoms to which it gives rise are sufficient to cause him to seek relief . . . . When in the walls of the sphenoidal or ethmoidal sinus there is involvement of the optic nerve in so far as it depends on bony pressure, blindness, partial or complete, is pretty sure to occur. When, however, the alarming symptoms of optic involvement are recent and slight, the trouble may not be due to a bony pressure, but to a pressure of soft parts, or to an extension of their inflammation, or of their vascular congestion. These latter conditions may be relieved by giving free drainage and ventilation to an occluded sinus; but in an inaccessible region, if there is pressure of a bony surface upon an optic nerve, it is difficult to see how the symptoms are to be relieved. Fortunately, there is good reason to believe that in the nature of things, the encroachment of the field of engorgement and soft hyperplasia upon the nerve structures gives a timely warning so that surgical interference is *possible before an irreparable condition results.*"

It is a well known fact that some cases of retrobulbar neuritis recover spontaneously. This is unfortunate in one sense as there is a tendency to wait so long, hoping to obtain this spontaneous recovery, that permanent injury results. In cases following an acute rhinitis where there is not complete loss of vision and where the pressure on the nerve is not so great as to endanger its vitality, one could wait a reasonable length of time before advising radical measures. The time, however, is so short where an operation can be of benefit that great judgment must be exercised in discriminating the types that might and might not recover spontaneously. I am hoping to obtain enough cases to draw some more definite conclusions on this line. Meanwhile it would seem the wiser course to err on the side of advising operations, possibly unnecessarily, than to permit one to become permanently blind through delay.

READY-TO-WEAR BRACES FOR STRAINED MUSCLES AND LIGAMENTS.

By H. W. Marshall, M.D., Boston.

The plan herein proposed consists of employment of efficient mechanical splints which are used immediately after injuries as in treatments of fractures. Ideas of their proper applications will be illustrated from a single well-known variety, namely, strain of muscles and ligaments of the back.

With reference to back strains this method consists of preparation beforehand of numerous steel splints of various sizes, shapes, and degrees of stiffness sufficient to meet all requirements of varying statures and weights of patients. The prepared braces are bent as needed by means of wrenches when they are

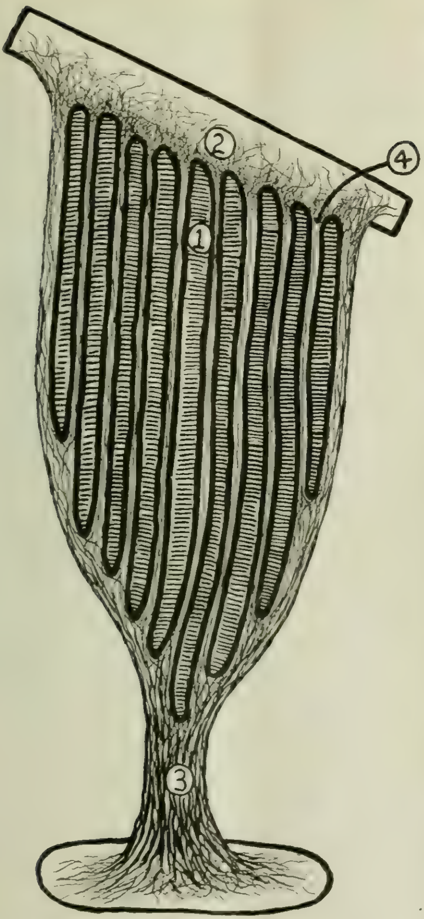

FIG. 1.

fitted to patients' individual peculiarities and curves; and they are applied quickly in order to avoid continued irritation to the damaged tissues from movements of the body subsequently to injuries.

Advantages are obtained by this plan which are not attainable by usual methods of strappings, pelvic belts, plaster casts, rest in bed, or special manufacture of individual braces; moreover, there are advantages of an economical nature arising from the possibility of using such prepared braces more than once.

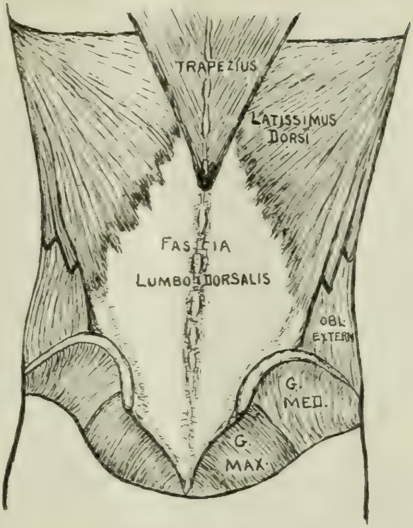

FIG. 2

Adhesive strappings do not immobilize spines most efficiently and they possess the disadvantage of hindering the use of local applications simultaneously at regular intervals. Rest in bed is extremely satisfactory in many respects, but there are possibilities still for unexpected new strains while patients are asleep, or from occasional injudicious movements which are bound to occur. Plaster casts are very effective methods of fixation, but are employed generally without simultaneous massage and exercises, and they cannot be used more than once. Individually prepared braces are open to objection because of delays encountered in their manufacture. Commonly they are put on after a number of weeks of unnecessary irritation which have developed oedematous changes and inflammatory reactions requiring comparatively long times for subsidence. It is often a just criticism of specially manufactured supports to say they are put on too late and are used at periods when muscles and ligaments should be limbered up instead of being stiffened further from prolonged immobilizations. Pelvic webbing belts do not prevent irritating pulls of back muscles above the pelvis on attachments of the latter into sacroiliac ligaments, and therefore are efficient mainly in binding the pelvis together more firmly.

Figure 1 is a schematic representation of a muscle with its insertions and attachments. Innumerable fine connective tissue fibrils (2) at-

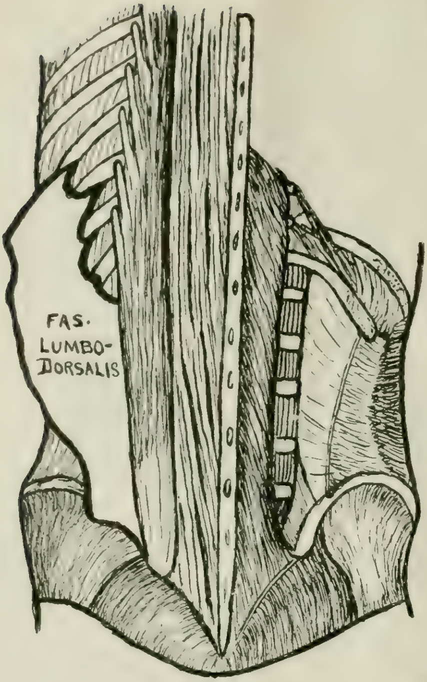

FIG. 3.

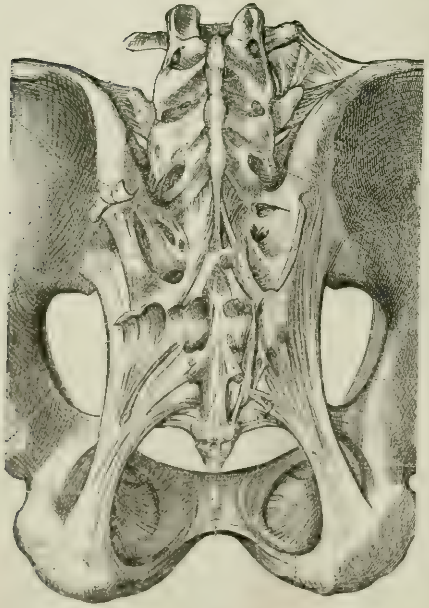

FIG. 4.

tach muscle fibres (1) to periosteum of bone or fascia where connections are intimate and extensive, while stronger bundles of connective tissue(3) fix muscle masses to smaller bony or ligamentous bases

The outer connective tissue envelope of the muscle mass together with connective tissue septa between muscle bundles forms a framework for embedded muscle fibres that is continuous from one attachment to the opposite one at the other extreme end of the entire mass. These connective tissues check harmful stretchings of muscles much as woven thread coverings of rubber elastic cords limit the stretchings of the latter. Damage may be done to small areas of fine fibers at (2), or to coarse strong fibers at (3), or to delicate intermuscular strands at (4) depending on the nature of injury received. The problem of musculo-ligamentous strains thus is, to a large extent, a fibrous connective tissue problem.

There are possibilities of ruptures of capillaries in any of the regions just indicated with small hemorrhages into the connective tissues, as well as more slowly developing oedematous changes.

Figures 2 and 3 are introduced to recall to mind the multiplicity of muscle bundles that exist in lower regions of backs with their innumerable attachments and insertions into aponeuroses, ligaments, all spinous, articular, and transverse vertebral processes as well as to the pelvis and ribs. It is not surprising that some small attachments of muscles or ligaments of this extremely complicated system frequently are stretched or ruptured by various sudden forcible movements of the trunk.

.Note especially in the left side of Figure 3 that the outer division of the erector spinae group of muscles, the ileo-costalis division, pulls strongly upward from attachments at the region of the posterior superior iliac spine. Sacroiliac ligament fibers also are attached to the posterior superior iliac spine, muscular insertions and ligaments being closely blended, so that the strain of muscular pulls of the erector spinae group is borne to an important degree by sacroiliac ligaments and lateral ligaments at the lumbosacral juncture. Encircling pelvic straps do not relieve the strains on these ligaments caused by the pull of back muscles, and to insure most perfect rest the action of back muscles must be diminished by plaster casts or braces which limit back motions. It is a

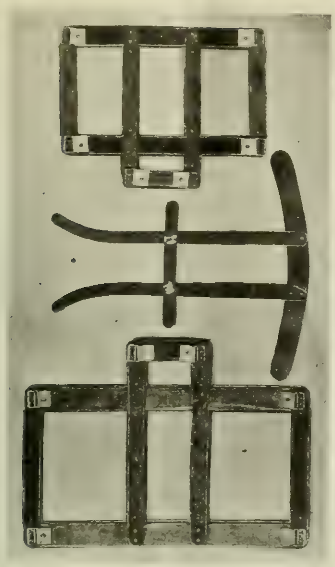

Fig. 5.

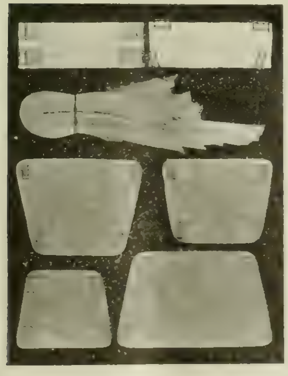

Fig. 6

well known clinical fact that bindings of the trunk which put erector spinae muscles on stretch increase pain in the designated region.

Figure 4 is taken from an old edition of a foreign publication, Toldt's Atlas, and it illustrates very well the arrangements of ligaments at the extreme lower end of the spinal column, including lower lumbar vertebrae, sacrum, coccyx, and innominate bones. Attention is called to numbers, directions, and great strengths of many of these ligaments which bind the pelvis firmly together and attach the flexible lumbar spine securely to this fixed bony base

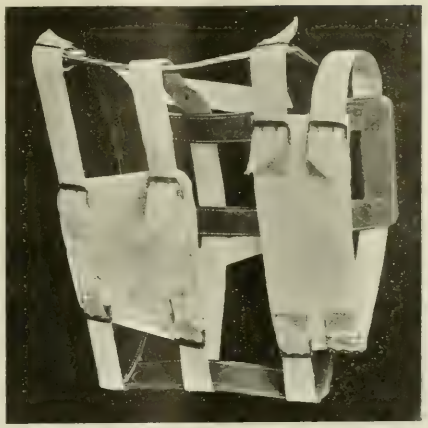

Fig. 7.

DETAILS OF CONSTRUCTION OF PREPARED BACK BRACES.

Figures 5, 6 and 7 show details of types of back braces which have been prepared by the writer in quantities for immediate use. There are in all 15 sizes, shapes and degrees of stiffness.

Two varieties are employed. The well-known spring steel back brace is used which has two vertical back steels, a pelvic band, anterior abdominal pad, and a chest pad that holds the upper part of the trunk with minimum restriction of the shoulders. The second type has four vertical back steels, as well as pelvic and thoracic horizontal steel bands, and abdominal and chest pads. These braces permit complete freedom of shoulders, yet restrict all motions of the lumbar spine to very considerable degrees, depending on stiffness of the steel framework. Different gauges and different widths of steel are employed, as well as different lengths and proportions in the assortment of sizes of braces. Figure 7 shows the parts of the second variety of brace assembled. A suitable variety of abdominal pads are made to care for variable abdominal developments, and all pads are attached to back splints by means of narrow webbing tape.

DETAILS OF USE OF BRACES.

Practical experience proves that patients welcome supports when discomforts of wearing the latter are less than discomforts of symptoms. Patients with moderately severe grades of symptoms tolerate braces willingly during their active waking hours, but prefer to sleep without restricting supports. Patients with very severe grades of pain are benefited by continuous wear of braces night and day.

Some patients like supports for a few hours, then find them irksome, while with others there are difficulties experienced in persuading them to wear any apparatus at any time.

Certain ones express opinions as soon as braces are first applied that they would have been well if they had had these supports earlier.

Muscles and ligaments that are uniformly weakened without appreciable trauma through vascular defects are relieved by supports even when symptoms are slight. Symptoms from incompletely reduced dislocations of any of the numerous small joints are not relieved by braces to as great an extent usually, and the latter may increase symptoms by their restrictions. Practically, braces which are easily accessible are used very freely as therapeutic tests as well as for relief, from a few hours to several months, and features of situations are revealed quickly which are overlooked ordinarily without them.

Reactions of patients to their apparatus accordingly can be used with considerable accuracy in determining degrees of disabilities. And it is found that industrial malingerers who complain of very severe symptoms nevertheless will not wear supports that are relatively slightly disagreeable and restrictive.

Principles of use include having braces on hand already for any emergency that may arise. They should be employed only as long as physiological and pathological requirements demand, and the principle of using expensive supports until value is received for costs incurred should be condemned. Braces should be discarded as soon as possible and they should be used generally in combinations with internal medicines, exercises, massage, and physical therapy. Earlier and more vigorous exercises can be tried with safety when there are efficient means of support available immediately afterwards. Employed in the manner which has been indicated, braces furnish extremely important convenient therapeutic agents for influencing courses of back strains, but violations of physiological or pathological laws, with resultant greater harm than benefit, are possible easily from their improper, haphazard employment.

STRAINED MUSCLES AND LIGAMENTS OF OTHER REGIONS OF THE BODY.

The same principles of local protection, exercises, physical therapy, and correction of toxic blood conditions carried out in similar rational physiological ways underlie treatments of strains wherever they occur, notably in feet, shoulders, and knees, also in necks, hips, elbows, wrists and ankles. They apply likewise in presence of fractures and traumatic joint inflammations. Discussions of the special features encountered in each individual locality and of special splints, however, cannot be attempted in this paper.

The writer believes strongly from recent observations of treatments received by many patients that hope for greatest future improvements in medical care lie in better balanced judgments of entire situations and more skillful applications of numbers of familiar reliable therapeutic agents, as single methods never fulfill all requirements perfectly. The large accumulation of medical data at present is conducive to confusion, and while enthusiastic work along special lines enriches our knowledge, yet it does not increase efficiency of treatment necessarily as viewed from percentages of successes in any large series of cases. Substitutions of important new methods for valuable old ones only shift the scene of activity, whereas real progress is a constructive building onto previously established reliable methods.

The specialist who quickly discerns possible applications of his special methods and skilfully carries them out does his patients a service or harm according as he has impartially and correctly judged their entire problems. If he has quickly dismissed all matters not pertaining to his field, and has entirely forgotten familiar fundamental physiological facts, then his supervision may mean a misfortune to the people whom he is endeavoring earnestly to relieve, and whom he does assist in minor respects at expense of more important omissions.

SUMMARY.

1. Efficient braces should be on hand for early immediate use and they should be employed in physiological ways together with other therapeutic agents. It is easy to use them for too long periods and thus prolong disability and stiffness.

2. Other essential accompaniments of brace

treatments or complications of strains always have to be considered.

3. Toxic conditions of the blood should be treated immediately at the outset by appropriate simple methods. Vascular defects are features very commonly neglected in treatments presumably because they are so difficult of recognition.

4. Exercises, physical therapy, and local measures should be employed with proper consideration of well-known processes of repair of tissues which pathology has made known.

5. No single method fulfills all physiological requirements and the various ones should be combined with due regard to physiological needs of alternate rest and stimulation in various degrees and proportions.

6. Hope for greatest future improvements in treatments of strains seems to lie now in better balanced, more complete judgments of patients' situations rather than in special new methods. At present advantages of special treatments, although skilfully managed, often are overbalanced seriously by violations of familiar fundamental physiological principles of greater importance which are forgotten. Radical surgical operations upon strained injured joints especially are done unnecessarily frequently, and numbers of these surgical procedures probably will be diminished to important degrees when careful comprehensive impartial judgments are arrived at beforehand.

7. Condemnations of haphazard incomplete treatments of chronic strains should be as severe as condemnations of improper care of serious fractures, since disabilities resulting from the former frequently are more protracted than disabilities following bony fractures.

MOTION STUDY OF INOCULATING TUBES.*

By M. M. Canavan, M.D., Boston,

Assistant Pathologist, Massachusetts Commission on Mental Diseases; formerly Pathologist, Boston State Hospital.

A standard method of inoculating culture tubes is presented with pictures showing details of arranging and placing the apparatus and the movements of the operator in inoculating tubes.

The major portion of the writer's technical bacteriological practice was performed at the Danvers State Hospital Laboratory under the direction of E. E. Southard, who was then (1906 to 1909) pathologist to the hospital. During that time extensive bacteriological research was done in post mortem bacteriology,[1, 2, 3, 4] epidemic dysentery,[5] endemic dysentery,[6, 7] and diphtheria.

This method was gradually and unconsciously evolved from pressure of work: technique will occur to anyone performing the same operation over and over in which the muscles gain an automaticity and mechanically assist the operator by traversing their paths, leaving the mind free for emergency or supervision, and would probably have been as unconsciously forgotten had not a "scientific selection" of a place for a summer vacation been made as a result of hearing Mr. F. B. Gilbreth read his paper on "Motion Models as a Method of Education," before the section on education at the American Association for the Advancement of Science, in Columbus, 1915. Mr. Gilbreth invited the section to attend the summer school in Providence and at this time (1916) micromotion studies of mechanical movements were made. An accurate study of the process here presented was pictured. Mr. Gilbreth commented favorably on the results,[8] which showed an average time of 24 seconds.

APPARATUS.

With a clear flat space 28 x 16 inches, a bunsen burner, gas connection, matches, tubes of mother culture, empty wire baskets, a platinum loop, a sharpened pencil, sterile tubes of culture media, a small block for slanting one basket, a table or desk at appropriate height with chair to accommodate the operator, one can rapidly reproduce the setting for this work.

By following the pictures from left to right, the process and angle of holding tubes, the order of assembling, etc., are perfectly seen.

The gas burner at full height of flame is in the center directly in front of the operator, as is also the mother tubes in an ordinary glass tumbler. This differentiates them for all time and prevents mixing them with the sterile culture tubes (on the right in baskets) and with the freshly inoculated tubes on the left (slanting basket).

Between the center and the culture tubes on the right is an empty wire basket on top of which rests the platinum wire loop, No 20 gauge, fitted into a glass handle: this placing prevents it from rolling into the operator's lap or taking other excursions calculated to delay the proceedings, and it is near the height of the flame in which it is necessary to pause. Also a pencil lies on the table in this sector and a match box is at the base of the burner. To the left is a basket placed in a slanting manner with its opening toward the center of the semicircle of the field of operation (Fig. A).

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* This is one of a series of 15 papers (261, 1919.1) offered to Professor E. E. Southard in honor of the decennium of the Bullard Professorship of Neuropathology, Harvard Medical School.

Set-up Showing Position of Apparatus on 4 inch Blocked Table, with Slant of Needle and Tubes Shown by 1-inch Screen.

THE CYCLE OF MOTION.

The cycle of motion consists in placing the mother tube in the left hand between the thumb and index finger, resting the free edge against the partly flexed second finger.

Next select a sterile tube with the right hand, to lie parallel to this tube; then twists are rapidly made of cotton plugs to make sure that they are free from the sides and are of proper snugness. Then the right hand picks up the glass rod, "flames" it by holding it perpendicularly to the gas flame and in it until the wire has a dull red glow, then passes it horizontally through the flame twice to rapidly sterilize without breaking the glass connection.

The next step consists of moving the left hand holding the tubes to the palm of the right hand, the little finger of which closes over the cotton in the tubes and holds the plugs firmly against the palm of the hand, at which time the left hand is separated from the right hand and the plugs are left firmly held away from possible contamination in the palm of the right hand, the thumb and forefinger of which support the loop which is cooling, since a red hot rod while sterile would cause great devastation of bacteria in the motor tube. The left hand approaches the open tubes to the flame, sterilizing their throats. The right hand holding the platinum loop, seeks a safe space behind the flame as the left hand pulls back the tubes and the platinum loop moves into the throat of the mother tube and gently rakes up some of the bacteria which is on the surface of solid media or which is caught up from the fluid media and with a slight turn of the left hand from the wrist, while the loop is withdrawn from the mother tube, the second tube is in position for the transfer of the culture and the throat of the sterile tube is entered and the bacteria deposited in the medium.

The tubes are again flamed, the stoppers replaced by one movement of the right and left hand reversing the withdrawal of the cotton. The right hand sterilizes the loop and lays the rod down over the top of the wire basket, swooping to the top of the table to pick up the pencil with which to write on the label the pertinent facts, after which a new culture tube is placed in the slanting basket to the left and a fresh tube is selected to begin a new cycle.

ADVANTAGES OF THIS METHOD.

1. Semicircular setting of apparatus conducive to greatest convenience.

2. Bare forearms prevents tipping by coat-sleeve or cuffs.

3. Elevation of platinum loop prevents its becoming misplaced and gives easy grasp.

4. *Pulling two cotton plugs by one movement and replacing by one movement* made possible by uniform distance between the tubes.

WHAT STUDYING A METHOD BY MICROMOTION TEACHES THE OPERATOR.

1. Necessity for having apparatus well arranged.

2. Desirability of maintaining standard conditions.

3. Incentive to improvement in technique.

4. Confidence in method.

REFERENCES.

[1] Bacterial Invasion of the Blood and the Cerebrospinal Fluid by Way of Mesenteric Lymph Nodes: A Study of 50 Cases of Mental Disease. Boston Medical and Surgical Journal, Vol. clxiii, No. 5, pp. 150-227.

[2] Bacterial Invasion of Blood and Cerebrospinal Fluid by Way of Lymph Nodes: Findings in Lymph Nodes Draining the Pelvis. Jour. A. M. A., Oct. 25, 1913, Vol lxi, pp. 1526-1528.

[3] The Significance of Bacteria Cultivated from the Human Cadaver: A Second Series of One Hundred Cases of Mental Disease, with Blood and Cerebrospinal Fluid Cultures and Clinical and Histological Correlations. Jour. Med. Research, Vol. xxxi, No. 3, January, 1915.

[4] 'Bacillary Dysentery at the Danvers State Hospital, Subsequent to the Epidemic of 1908. Boston Medical and Surgical Journal, Vol. clxiii, No. 5.

[5] Organisms Recovered from Dysentery Cases Studied Bacteriologically, December, 1908, to June, 1910. Boston Medical and Surgical Journal, Vol. clxiii, No. 5.

[6] Mannite and Non Mannite Fermenting Organisms in a Case of Dysentery Complicated by Hemorrhagic Endometritis Probably Due to a Third Organism. Boston Medical and Surgical Journal, Vol. clxiii, No. 5.

[7] Identification of Epidemic Dysentery in Danvers Hospital as Due Mainly to Bacillus Dysenteriae (Shiga Type). By Drs. Richards and Peabody. Boston Medical and Surgical Journal, Vol. clxi, No. 20, Nov. 11, 1909.

[8] Boston Sunday Post, Aug. 27, 1916.

SPECIFIC AORTITIS.

By **William D. Reid**, M.D., Boston.

(Concluded from page 74.)

In our out-patient cases[2] there were two instances in which the Wassermann reaction was negative but became definitely positive while the patient was under antisyphilitic treatment. Among the fifty-four autopsy cases there were nine in which the test was negative in spite of the fact that at the necropsy, shortly afterward, definite evidence of syphilitic disease of the aorta was disclosed.

As bearing on this problem I shall quote certain statements made as regards the Wassermann reaction at the recent Atlantic City meeting. M. J. Rosenau[41] states that the Wassermann is a crude test, and in any series of cases the positive results may be dependent on the sensitiveness of the antigen used. Therefore, unless the Wassermann test be standardized, particularly as regards the sensitiveness of the antigen, the interpretations may be incorrect. Homer F. Swift, of New York, has said: "I would like to call attention to the paradoxical Wassermann reaction. If one follows the reaction with the two methods—the ice box antigen and the cholesterin antigen with the warm technic—one will often find cases which will give a positive reaction with one method and a negative reaction with the other. One cannot tell which antigen is going to give a positive reaction in a given case. Results from different laboratories have often given contradictory readings because of this very fact. It is important that both methods 'be applied.[41]"

If the blood Wassermann is negative Fontaine[9] believes that it is indicated to obtain the spinal fluid for cell count and Wassermann reaction. In my opinion it is questionable if it is worth while to do a lumbar puncture as the spinal fluid may also be negative and, if positive, merely evidences syphilis in the body but not necessarily in the aorta.

The luetin test is advocated by Brown[42] in suspected cases of aortitis which react negatively to the Wassermann test, but at present I am not resorting to it as I am of the opinion that this skin test has fallen into disfavor with competent syphilographers.

I have been induced to discuss the Wassermann reaction at the above length because there is a tendency to accept or deny the diagnosis of specific aortitis merely on a basis of the report of the Wassermann. I trust that in the above I have made it clear that it is unjustifiable to be guided absolutely by the report from the laboratory.

Roentgen Findings. The roentgen findings are the final data needed in checking up the diagnosis of aortitis. The interpretation of the plates is, perhaps, the province of the radiologist and I shall attempt merely to give some of the points thereon. Holmes and Ruggles, in their new book[43], state: "The dilatation as seen radiographically occurs most frequently as a result of specific disease. There may be a slight amount of dilatation present in arteriosclerosis and cases with high blood pressure.

"Specific aortitis tends to appear first just above the aortic valve and as the wall of the aorta becomes weakened, a bulging of this area takes place. On the plate or the fluoroscopic screen the position of this bulge is seen just above the shadow of the right auricle.

"A marked prominence of the aortic shadow to the right is almost always due to specific aortitis. In arteriosclerosis the calcified plaques in the aorta are not visible unless extensive. The tortuous aorta, however, does give a definite, fairly characteristic change in the appearance of the aortic shadow. There is a distinct, sharp increase in the upper part of the shadow to the left.

"Diffuse dilatation of the aorta also occurs and is seen as a general enlargement of its shadow. There is much more difficulty in interpreting this type from roentgen evidence, as the findings may be the result of the changes in the aortic curve already mentioned."

Elliott, in his excellent paper[6], devotes considerable detail to the roentgen findings in aortitis. Carman[44] also writes at length on this phase. Allbutt[4] states that a reduction of the pulsation and a deepening of the shadow are the only signs before enlargement, whereas

Elliott asserts that at first there is merely a doubtful dilatation of the first part of the arch with an exaggeration of the pulsation at this point. Later the shadow extends laterally beyond the outline of the right auricle. It is common to find some dilatation of the aorta in high blood pressure states, in nephritis and in arteriosclerosis.[6] In the main I do not feel that the x-ray can be relied upon in early cases (note the difference in statement by Elliott and Allbutt as regards the effect on the pulsation) as the vessel may not yet be definitely dilated or otherwise altered. Our Roentgen Department failed in three cases of advanced aortitis, one in 1912, one in 1915 and the last in 1918. In the 1915 instance the error was that of interpreting the findings as due to mediastinal tumor.

The custom of mensuration of the heart and aorta should be employed in all these examinations. The measurements, even if not yet diagnostic, might be of great value after some interval when another examination might show a definite increase in the width of the aorta. A rough rule, given me by R. D. Leonard, of Boston, is that if the width of the great vessels is more than half that of the heart the case is almost certain to be specific aortitis.

An increase of the size of the heart gradually appears whether there is aortic insufficiency or not.[6]* This affects to a much greater degree the long diameter than the broad diameter of the heart, which assumes a position more nearly horizontal than normal, the so-called 'boot-shaped shadow.'[6] In interpreting the measurements of the heart as obtained by radiography one should be familiar with the variations in the normal individuals and perhaps be guided by the rule mentioned above and given me by Leonard. Allesandrini[45] makes an ingenious use of the ratio between and the product of the longitudinal and the transverse diameters, and thus believes that by this method of interpreting the figures the case may be classified at once.

Sir Clifford Allbutt urges that the radiologist should also examine the case from an oblique or semilateral angle, of about 20 to 35 degrees. Elliott[6] reports a case of aneurysm missed in the antero-posterior views but finally detected by recourse to the oblique method.

In spite of its limitations in early cases the x-ray seems to produce the best evidence that can be brought to bear in the identification of these cases. I would urge, therefore, a more frequent use of this method of examination.*

Diagnosis. Though easy to diagnose in a typical and advanced case, luetic aortitis is almost impossible to diagnose in the early or latent type. The absence of clearly defined signs and symptoms in many cases probably accounts for the lack of attention paid to the aortic arch in the average physical examination.

One should consider syphilis in many case of cardiovascular degeneration of obscure origin. Every case of aortic insufficiency developing in an adult not giving a clear history of rheumatic endocarditis should at once arouse the suspicion of specific aortitis. Such a case warrants careful study and should be checked up by the Wassermann blood test and radioscopic examination. That so many cases are not diagnosed or at least suspected until the stage of dilatation, aneurysm, or valve defect is a reproach to our methods of diagnosis and shows our lack of appreciation of the prevalence of luetic aortitis.

The observation of syphilitic skin lesions, or some other mark of lues may suffice to turn a possible into a probable diagnosis of aortic syphilis. A definite history of syphilitic infection and a positive Wassermann reaction are of considerable value, but they may be absent. The x-ray, in all but very early cases, gives perhaps the most definite confirmatory findings. It is well to remember that Montgomery[46] estimates the occurrence of extragenital chancres as 5 to 10 per cent. of the syphilis in the United States, and Warthin[21] emphasizes the presence of congenital syphilis in adults so that the assumption of acquired venereal disease is not the *sine qua non* of the diagnosis of specific aortitis.

In my experience the occurrence of a little shortness of breath, perhaps some pain or discomfort under the sternum, or some evidence of cardiac weakness are the most likely points to draw one's attention to the aorta. If the patient is a young adult and there is an absence of a definite history of non-specific infection the diagnosis of aortitis becomes increasingly probable. Of course, if physical examination already gives evidence of definite dilatation of the arch, involvement of the aortic ring, or a further complication of aneurysm, the diagnosis is simplified.

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* To check up this my analysis of the cases without insufficiency of the aortic valve shows 15 in which the heart was hypertrophied and dilated. Ten of these had slight fibrosis of the aortic cusps, and of the remaining five, without involvement of the aortic valve, renal disease and mitral endocarditis may account for the enlargement of the heart. Thus but three cases with normal aortic valves showed hypertrophy though, in my opinion, mere aortic roughening is an inadequate explanation of cardiac hypertrophy

* While this article was in print a valuable article has appeared on "Roentgen-Ray Study of the Great Vessels," by C. L. Martin, Jour. A. M. A., 1920, Vol. lxxiv, p. 723.

But it is in the earlier stage, the time when there is hope that correct treatment may prevent the occurrence of any permanent damage to the cardiovascular system, that every care must be used to make a diagnosis. It is only when all the facts have been collected that definite conclusions should be drawn and I feel that at times only a tentative diagnosis is possible. One's judgment may lead him to advise antiluetic treatment and to be influenced somewhat by the result of the therapeutic test. To-day a probable diagnosis may be the best that can be done but in six months, unless treatment has been instituted, the patient may have developed unmistakable evidence of the disease. There is then, may I repeat, no one point on which a diagnosis is to be made, but each suspected case requires careful attention to the history, especially to symptoms and physical examination, and is to be checked up by radioscopic examination and Wassermann test.

A study of the clinical diagnoses in the 54 cases which came to autopsy shows a gratifying success in diagnosis by the medical side of the Massachusetts General Hospital. In but three instances, where the specific aortitis was well marked and the primary cause of death, did the clinicians fail to note the affection of the aorta. Two of the three so-called misses, occurring in 1910, 1911, may be regarded as failures only in the sense that the presence of syphilis was not appreciated. There were five patients in whom the specific aortitis was well advanced but in whom some other affection was the primary cause of death and in each of these the aortitis escaped clinical recognition. In none of the twelve cases occurring on the surgical services of the hospital was the aortitis diagnosed, which to my mind, simply emphasizes that syphilitic infection of the aorta is, strictly speaking, a medical diagnosis. My study of the records convinces me that specific aortitis, if at all well marked and not obscured by some other disease, such as pneumonia, etc., can and is being correctly appreciated in life in our medical wards.

Differential Diagnosis. There are many conditions from which one must differentiate specific aortitis.

First let us speak of *non-syphilitic aortitis*. Rheumatic aortitis is perhaps the best known type. It, too, occurs in the first part of the aorta and may even cause an aneurysm but usually shows a tendency to recovery. Welch, quoted by Allbutt,[4] finds that in most cases it arouses no subjective symptoms; if signs there be they are unsought; and in a few cases subjective symptoms are present but ignored. Osler[47] writes that in rheumatic fever the aortitis may be serious. Klotz, Renou, Barié, Pawinski, and others[4] have reported this affection. Bennert[48] who collected 20 cases formulated the rule that aneurysm in children and in youths is a result of acute rheumatic fever. Allbutt reports cases in children of symptoms typically anginoid. In some cases no signs of valvular disorder could be made out and the pain had been attributed to the heart without making any examination of the aorta.

Influenzal aortitis needs but a brief mention. Mamorstein[49] found the bacilli of influenza in the aortic lesions. Fortunately, as pointed out by Kraus,[50] the symptoms and dilatation usually recede.

In malignant endocarditis verrucose aortitis has been reported.[4] There is ulceration and much inflammation at times, and some tendency to perforation. Perforation has occurred also in anthrax, in which case the bacilli were found (Oliver and Woodhead[51]) in influenza[4] and in a boy of six years with sepsis.[52] Non-specific aortitis has been reported in the suppurations, erysipelas, small-pox, typhoid fever, diphtheria, measles, scarlet fever, pneumonia, malaria, tuberculosis, and gonorrhea.[4] With these non-syphilitic infections I confess I have had no experience. As emphasized by Elliott[6] they are rare and happily have a marked tendency towards spontaneous recovery. The pathological differentiation may well be left to the pathologist. It is perhaps enough for us to realize the existence of these non-syphilitic infections of the aorta, and given a case of aortitis after one of the above infections, to consider the possibility of its non-syphilitic origin.

As *arteriosclerosis* in elderly patients is often combined with syphilis the determination as to whether both or simply one of the two processes are present offers full opportunity for one's best judgment. Pure atheroma rarely causes insufficiency of the aortic valve and practically never leads to aneurysm.[4] Allbutt further believes that pure arteriocleroșis rarely widens the arch so remarkably. Pain is present in but a small minority of arteriosclerotic cases. The gross pathological findings differ, particularly in that there are fatty and calcareous changes as contrasted to the fibrosis of syphilis. In practice I find that one is not confronted with the problem of arteriosclerosis when dealing with youths or young adults. It is in patients of perhaps fifty years or more, those who may give abundant evidence of arteriosclerotic changes in the peripheral arteries, that this point arises. The presence of symptoms, evidence of an aortic leak, much dilatation of the arch or the demonstration of an aneurysm point strongly to the presence of syphilis. The result of the Wassermann reaction, evidence of syphilis elsewhere in the body and a history of luetic infection are all helpful, but I believe the roentgen findings give us the most definite data on which to decide. I am impressed that the distinction is less important in aged patients, as the disease appears less active, and I doubt if antisyphilitic treatment will have as marked effect as in some of the younger victims.

Hypertension and chronic interstitial nephritis. Carr[53] points out that cases of hypertension, commonly regarded as chronic interstitial nephritis, have developed on a syphilitic basis. But, as regards aortitis, with none of its kinds has abnormally high blood pressure any concern.[4] Oberndorfer,[3] too, reports the systolic pressure as being normal unless the aortic valve has become insufficient. Elliott believes that syphilitics are not exempt from blood pressure defects due to causes quite other than syphilis The roentgen findings as to the shape of the heart and aorta, should they prove typical, may settle the matter. Of course examination of the urine and study of the renal function, fundus examination, etc., are indicated in cases in which there is any doubt as to the integrity of the kidney.

Mitral lesions. The presence of organic disease of the mitral valve usually points to a rheumatic endocarditis and the insufficiency of the aortic valve may then be of non-syphilitic origin. On the other hand if the systolic at the apex be due to a relative mitral insufficiency, not infrequent in syphilis,[32] our diagnosis still stands. However, in 1909, Allen[54]* reported the finding of a positive Wassermann reaction in some cases of mitral stenosis, in which the fibrous circumference of the orifice proved to be thickened by syphilis, so that we cannot confine our suspicions to aortic disease. Thus in a few cases of mitral stenosis of obscure origin luetic infection may be at work. Warthin[21], however, states that he has never found syphilitic changes in the mitral valve. Sir Clifford Allbutt[4] emphasizes that, in heart disease of apparently other causation, occasionally it is found that the addition of antisyphilitic to other remedies may be of no little aid. In my experience one is assisted by the history; "apparently well until recently" and the absence of the story of an infection which might cause rheumatic endocarditis is not the story of a rheumatic heart.

While discussing the differentiation from mitral disease, which, it is seen, is usually non-syphilitic, I wish to introduce the summary of a case history, which was reported in 1917 by Furstenburg[55] in which the presence of an Austin Flint murmur at the apex presumably accounted for a diagnostic error.

Woman, age 29. History of severe attacks of acute articular rheumatism, each definitely preceded by tonsillitis and quinsy, at 17 and 22 years of age Had been in bed more than a month.

Heart. Apex 5th space. First sound at apex snappy, preceded by murmur heard only at apex, not transmitted. A low-pitched faint blowing, late systolic murmur at apex and faintly transmitted towards the axilla. In the tricuspid area of soft blowing, diastolic murmur was faintly heard. Pulmonic second sound accentuated. Radial pulse, regular, forceful, poorly sustained, tension somewhat plus.

Wassermann reaction negative, blood pressure 110 to 60, radioscopic examination shows aortic insufficiency.

Patient died suddenly, apparently from cocaine poisoning, during the operation for tonsillectomy, done in treatment of supposed rheumatic mitral endocarditis.

The autopsy findings were: congenital syphilis, diffuse interstitial myocarditis, aortitis, syphilitic spleen, aortic insufficiency and relative insufficiency of the mitral valve, and cardiac dilatation.

I believe that Furstenburg is to be commended for publishing this case report. In the presence of an aortic lesion, as pointed out by Mix[31], the examiner must be wary of accepting apical murmurs as organic. This case also illustrates the point that it may occasionally be necessary to diagnose syphilitic aortitis in spite of a strong history of acute articular rheumatism. I have recently met several cases in which much the same physical signs have been present but in which the appreciation that I was dealing with an Austin Flint murmur has permitted the diagnosis of syphilitic aortitis to remain unshaken.

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* This article is quoted by Allbutt. I have been unable to read the original paper and obtain the evidence on which Allen makes his assertion.

Aortic insufficiency needs but little comment. It is one of the results of well marked luetic aortitis. Longcope[20] found that at autopsy 81.5 per cent. of an uncomplicated series were specific, while Larkin and Levy[56] go as far as to state that pure aortic insufficiency is always syphilitic, except in infective endocarditis. We report here that regurgitation through the aortic valve is rare in pure arteriosclerosis. Grau[57] points out that as a rule cardiac compensation is less well established in syphilitic aortic insufficiency than it is in insufficiency of non-specific causation.

Aortic Stenosis. Mix[31] devotes some space to the distinction between aortic stenosis and specific aortitis, and while in the main I agree with him that, given the presence of true stenosis of the aortic valve, the diagnosis is not cardiovascular syphilis, still the case report of syphilitic aortic stenosis I have quoted above, (in the section on pathology) makes it evident that even this rule is not infallible. In what little study I have made of the literature I have not noted any other case of aortic stenosis of syphilitic origin nor of any other writer than Mix who is so positive that true stenosis is absolutely contrary to the pathology of syphilis. In aortic stenosis there are the three diagnostic criteria of von Leube [31], *i. e.* (1) loud, sawing systolic murmur transmitted upward into the neck, (2) systolic thrill over the second right interspace, and (3) absence of the aortic second sound. And finally Broadbent has added the characteristic pulse—*pulsus tardus et parvus*. The systolic over the aortic area is commonly softer and the thrill, if present, is as a rule less marked in aortitis as compared to stenosis. I note in the case of apparent syphilitic stenosis, quoted in the section on pathology, that the aortic second sound (as happens rarely) was retained. The history of an infection such as rheumatic fever should strengthen the diagnosis for non specific stenosis. When still in doubt the Wassermann test may help and finally in an advanced case, such as most of those in which the problem of stenosis or aortitis arises, the roentgen findings should disclose the syphilitic process if present.

Aneurysm does not truly form a part of the differencial diagnosis of syphilitic aortitis as it is simply a complication of that affection. I have not devoted much space to aneurysm in this paper as any adequate consideration of the same would require undue extra space. I would suggest that the detection of some of the many pressure signs and especially the roentgen examination may disclose the presence of an aneurysm. Cabot notes[34] that in one half the cases of sacculated aneurysm there are no sounds or murmurs over it. It has been pointed out by Allbutt[4] that cases in a sanatorium for tuberculosis have not infrequently first been correctly diagnosed specific aortitis and aneurysm as a result of a roentgen examination.

Tumors of the mediastinum may at times offer some difficulty in differentiation, but I believe that a careful study with a consideration of the data present, and especially the roentgen examination will almost always distinguish between aortitis and mediastinal tumor. G. T. Herbert[58] believes that the combination of signs of mediastinal pressure and pulmonary involvement is almost diagnostic of neoplasm.

Tabes dorsalis hardly needs differentiation save as regards the so-called cardiac crises in tabetic patients. Moore[7] believes the cardiac crises to be anginal attacks from the syphilitic infection of the coronary arteries. Allbutt[4] is more conservative in stating that in general, in well-advanced tabes, anginoid symptoms are more apt to be cardiac crises. With tabes latent and the aortic disease well-developed, seizures will more probably prove of true cardiac origin. He finds aortitis to have a longer period of latency than tabes dorsalis.

It is of interest, however, to note the frequency of aortitis in tabetic patients. Thus Chiari, Straub, Deneke, and others found the vascular disease in about 40 per cent. of the cases with tabes, but Stadler, quoted by Elliott[6], found aortic disease in almost all cases of manifest tabes.

Prognosis. On the whole the prognosis of specific aortitis is grave, perhaps because of the tendency in many cases to the progressive impairment of the integrity of the aortic cusps with resulting regurgitation through the valve and decompensation of the heart. Meeker[59] points out that aortitis of the chronic type may suddenly end in angina pectoris. Aneurysmal changes develop in not a few. Longcope[20] found an aneurysm in 13 cases of aortic insufficiency. Elliott[6] asserts that 30 per cent. develope aneurysm and about the same percentage sclerosis and retraction of the aortic valves.

Lenz, quoted by Elliott, states that in large cities such as Hamburg, Germany, 25 per cent. of all syphilitics die of aortitis and its consequences, as against 3 to 4 per cent. from paresis, 1 to 2 per cent. from tabes dorsalis, and 10 per cent. from all other forms of internal syphilis, as of the brain, liver, stomach, lungs, etc.

Considerable depends on the amount of damage already incurred before the diagnosis is established and treatment instituted. Thus if insufficiency of the aortic valve has ensued, serious mischief has been achieved. Cardiac decompensation especially if advanced to the stage of edema of the lower extremities always offers a poor prognosis.[31] Arhythmia appearing in aortic regurgitation has long been considered of bad prognostic import and to-day we know that Warthin has demonstrated the cause to be myocarditis directly due to the treponemata.[31]

In my study[2] of the cases under treatment at the Massachusetts General Hospital I concluded that intensive antisyphilitic therapy is now being administered with promising results, but the data are too limited to warrant any very positive conclusions. As noted by various observers, whose reports I have consulted, the improvement is in symptoms and not in physical signs. Thus I found no record in which there was definite evidence of diminution of the dilatation of the arch or lessening of the evidence of valvular impairment. An understanding of the pathology of syphilis of the aorta makes it easy to comprehend why aneurysm, aortic insufficiency, etc., cannot be removed; but if an arrest of the disease can be achieved it is worth striving for. This is somewhat analogous to the problem of pulmonary tuberculosis in many cases of which, perhaps in most cases, an arrest of the disease is all for which it is reasonable to hope.

As compared to the specific type, rheumatic and other non-syphilitic aortitis have a much brighter outlook. Allbutt[4] notes that recession of the dilatation generally does take place, whereas he has no recollection of its occurrence in any appreciable degree in syphilis. He puts the probable length of life as 2 to 3 years in syphilitic aortic regurgitation as contrasted with even 20 or more years in that of other etiology. Thomas[31] estimates the usual length of life after the onset of symptoms as 1 to 2.5 years. Bailey,[18] on the other hand, believes that many non-syphilitic cases of small dilatations and aneurysms of the aorta may in later life prove a menace to the health of the individual. It would seem reasonable, if the integrity of the aorta was much affected by a specific or a non-specific infection, that this aorta might at some future time yield to the wear and tear of life to a degree that would not occur in an aorta never infected. Much importance must lie in the amount of damage incurred at the time of the acute infective aortitis.

Treatment. We have seen that syphilitic disease of the aorta is caused by the spirochetes in the aortic tissue. Therefore it is logical that treatment, to be effective, should, primarily, be directed towards destroying the spirochetes as quickly as possible. Experience in the past[4] has shown that mercury has considerable beneficial influence, and since the introduction of salvarsan and allied arsenical preparations evidence is accumulating that this type of remedy is also of value in the treatment of aortitis. In studying the cases treated in our out-patient department I have been strongly impressed[2] that the group given diarsenol in addition to mercury have shown more evidence of benefit. The length of life, even in cases of a comparatively advanced type, has been about three years to one in favor of those receiving modern intensive antisyphilitic treatment.

According to Brooks and Carroll,[62] and others, antispecifics should, irrespective of a negative or positive Wassermann reaction, be administered from time to time throughout life. It is capable of greatly improving the symptomatic comfort of patients, and even if this were all of which it were capable, its guarded yet vigorous employment would be justified. Allbutt[4] advocates that, when in doubt as to whether the case is truly of specific origin and therefore there is the question as to the employment of antisyphilitic treatment, it is better to err on the positive than on the negative side. In my opinion the wisdom of applying a therapeutic test cannot be too strongly emphasized. And especially in the early cases it is that the diagnosis may be in doubt; delay here until the diagnosis may be evident even to the sceptical may mean the loss of the best opportunity to check the disease and preserve for the patient a cardiovascular system of which the integrity is but little impaired.

In angina pectoris which we have seen is commonly closely allied if not part of an aortitis, Elliott[6] reports relief from small doses of salvarsan and recently Josué[63] states that there were no further anginoid attacks after antispecific treatment in 90 per cent. of his 9 cases, although the Wassermann was positive in but 33 per cent. Josué, however, prefers the use of mercury without salvarsan.

In view of the favorable reports from many clinics of full antisyphilitic treatment I am surprised to note that Hirschfelder[32] is rather unfavorable to the use of the arsenical preparations in the therapy of aortitis. He gives a careful account of the use of salvarsan in syphilis and notes that a fall of blood pressure amounting to 25 to 45 mm. of mercury has been recorded after its administration. Wechselmann, however, studied this problem and noted that the fall in blood pressure rarely occurred if the dose of salvarsan did not exceed 0.5 gm. In our out-patient clinic these cases are being treated by alternate courses of mercury and diarsenol, in which the dosage of the latter varies from 0.15 to 0.45 gm. and it is rare that any ill effects are produced. Presumably this is the more correct method, but I may well leave further discussion of this point to the syphilographers.

Potassium iodide is administered by mouth and, in my opinion, is of much less certain value. It probably, in view of our knowledge of the presence of the spirochetes directly in the aortic lesions, is little indicated save in the late cases of syphilis.

One further point in the treatment as regards treatment remains to be mentioned, *i. e.* that in cases in which there is any evidence of cardiac disturbance such as failing compensation, standard cardiac therapy,—digitalis, rest, etc., is indicated. There is nothing peculiar to the principles of this form of treatment in specific aortitis as compared to cardiac disease of other causation.

Conclusions. Syphilitic disease of the aorta is one of the most common and most serious findings in all cases of acquired syphilis.

The lesion is essentially a mesaortitis, and a manifestation of active syphilitic disease; its conception as a parasyphilide being made untenable by the discovery in 1906 of the spirochete directly in the aortic lesion.

The aortic process frequently extends to the aortic cusps, and Warthin has shown that relatively often there is an accompanying myocarditis of spirochetal origin.

Aortic roughening, aortic regurgitation, dilatation or aneurysm of the aortic arch, and angina pectoris are common in syphilitic aortitis.

Aortic or mitral stenosis is of exceptional occurrence in connection with specific aortitis.

Non-syphilitic forms of aortitis are rare.

Many cases may be called latent in that symptoms are absent. Such cases are commonly undiagnosed until disclosed, perhaps, in a routine roentgen examination.

There is no one point on which a diagnosis should be based, but only after a study of all the facts in a given case should a decision be rendered.

Every case of cardiac disturbance of obscure origin, especially if the patient be a young adult and if there are signs of involvement of the aortic valve, should promptly suggest the probability of syphilitic causation.

A positive Wassermann reaction is of confirmatory value but is frequently absent.

Roentgen examination, though unreliable in early cases, gives perhaps the most reliable findings.

Specific aortitis evidences a tendency to progressive impairment of the heart and aorta and is, therefore, of serious import.

Treatment should be directed primarily towards killing the spirochetes in the aortic lesions. Decomposition of the heart is to be treated as in that of non-syphilitic origin.

Early diagnosis is imperative. I feel that there should be a greater willingness on the part of clinicians to make a tentative diagnosis of specific aortitis, and a resort to a therapeutic test. Along such lines lies our greatest hope of improvement in the mortality rate of this disease.

REFERENCES

[1] Wright and Richardson: Boston Medical and Surgical Journal, 1909, Vol. clx, p. 539.
[2] Reid, W. D.: Jour. A. M. A., 1919, Vol. lxxiii, p. 1832.
[3] Oberndorfer, E.: Munch. ärzt. Verein, Nov. 20, 1912.
[4] Allbutt, C.: "Diseases of the Arteries, including Angina Pectoris," 1915, Vol. ii, p. 140.
[5] Deneke, Th.: Deut. med. Woch., 1913, p. 441.
[6] Elliott, A. R.: Med. Clinics No. Amer., 1918, Vol. i, p. 1305.
[7] Moore, W. C.: Amer. Jour. Med. Sci., 1918, Vol. clx, p. 660.
[8] Lancisi: "De novissime observatis abscessibus," c. xviii, ed. 1724.
[9] Fontain, B. W.: South. Med. Jour., 1918, Vol. ii, p. 278.
[10] Welch, F. H.: Med. Chir. Trans., 2nd ser., Vol. xl, p. 1876.
[11] Reuter: Munch. med. Woch., 1906, Vol. liii, p. 778.
[12] Benda, C.: Berlin klin. Woch., 1906, Vol. xliii, p. 989.
[13] Schmorl: Munch. med. Woch., 1907, Vol. liv, p. 188.
[14] Cabot, R. C.: Jour. A. M. A., 1914, Vol. lxiii, p. 1461.
[15] Warthin, A. S.: Amer. Jour. Med. Sci., 1916, Vol. cliii, p. 508.
[16] von Simnitsky, S.: Zeit. f. Heilkunde, April, 1903, Abt. 2, 177.
[17] Wiesel, J.: Zeit. f. Heilkunde, 1906, Abt. 2, 262.
[18] Bailey, S. F.: Calif. State Jour. Med., November, 1918, p. 490.
[19] MacCallum, W. G.: "Text-book on Pathology," 1916, p. 347.
[20] Longcope, W. T.: Arch. Int. Med., 1913, Vol. xi, p. 15.
[21] Warthin, A. S.: Amer. Jour. Syphilis, Vol. ii, July, 1918, p. 425.
[22] Wiesner, R.: Centralbl. f. Path. u. path. Anat., 1905, Vol. xvi, p. [illegible]
[23] Rach and Wiesner: Wien. klin. Woch., 1907, Vol. xx, p. [illegible]
[24] Klotz, O.: Jour. Path. and Bacteriol., 1908, Vol. xii, p. 11.
[25] Brooks, H.: Amer. Jour. Med. Sci., 1913, Vol. cxlvi, p. 513.
[26] Fraenkel, A.: Berl. klin. Woch., 1913, No. 17, p. [illegible]
[27] Osler, W.: Brit. Med. Jour., No. [illegible], p. [illegible]

[28] Piersol, G. A.: "Human Anatomy," 5th edition, p. 723.
[29] Morris, H.: "Human Anatomy," 1899, p. 468.
[30] Gray, H.: "Anatomy, Descriptive and Applied," New Amer. Ed., 1913, p. 575.
[31] Mix, C. L.: Med. Clinics of No. Amer., 1918, Vol. i, p. 1215.
[32] Hirschfelder, A. D.: "Diseases of the Heart and Aorta," 3rd edition rev., 1918, p. 346.
[33] Klotz, O.: Trans. Assn. Amer. Phys., Vol. xxii, 1912, p. 218.
[34] Cabot, R. C.: "Physical Diagnosis," 6th edition, 1915, p. 252.
[35] von Schrotter, L.: von Nothnagel's Path. u. Ther., Vol. xv, Bd. 2, p. 1.
[36] Brugsch and Schittenhelm: "Lehrbuch klinischer Untersuchungsmethoden," 1911, p. 57.
[37] Pardee, H. E. B.: Amer. Jour. Med. Sci., Vol. clviii, No. 3, September, 1919.
[38] Flint, A.: "Physical Diagnosis," 7th edition, 1917, p. 312.
[39] Delafield and Prudden: "Text-book of Pathology," 1919, p. 648.
[40] Cummer and Dexter: Jour. A. M. A., 1912, Vol. lix, p. 412.
[41] Jour. A. M. A., Aug. 23, 1919, p. 633.
[42] Brown, G. E.: Amer. Jour. Med. Sci., 1919, Vol. clvii, No. 41.
[43] Holmes, G. W., and Ruggles, H. F.: "Roentgen Interpretation," 1919, p. 124.
[44] Carman, R. D.: Collect. Papers of the Mayo Clinic, 1918, Vol. x, p. 632.
[45] Alessandrini, P.: Policlinico, Rome, May 4, 1919, Vol. xxvi, No. 18, p. 545.
[46] Montgomery, D. W.: Jour. Cut. Dis., 1905, Vol. xxiii, p. 342.
[47] Osler, W.: Lancet, August, 1908, p. 384.
[48] Bennert, R.: Zeitsch. f. klin. Med., Bd. lxix, Nos. 1 and 2, p. 121.
[49] Mamorstein, M.: Rev. de méd., 10 mars, 1908, p. 265.
[50] Kraus, F.: Deutsche med. Woch., 19 Marz, 1914, p. 578.
[51] Oliver, T., and Woodhead, S.: Lancet, 1891, Vol. ii, p. 1033.
[52] Jordan, A. C.: Lancet, Feb. 21, 1903, p. 515.
[53] Carr, J. G.: Illinois Med. Jour., 1918, Vol. xxxiii, p. 149.
[54] Allen: Intercol. Med. Jour. of Australia, March, 1909.
[55] Furstenburg, A. C.: Trans. Clin. Soc. Univ. Mich., July, 1917, p. 133.
[56] Larkin and Levy: Jour. Exper. Med., 1916, Vol. xxiii, p. 25.
[57] Gran, H.: Zeitschr. f. klin. Med., Bd. lxxii, 1910.
[58] Herbert, G. T.: Quart. Jour. Med., April, 1918, p. 165.
[59] Meeker, W. R.: Jour. A. M. A., April 6, 1918, p. 969.
[60] Longcope, W. T.: Jour. A. M. A., 1910, Vol. liv, p. 118.
[61] Thomas, R. E.: Southern Med. Southwestern Med., 1918, Vol. ii, p. 1.
[62] Brooks and Carroll: Jour. A. M. A., 1914, Vol. lxiii, p. 1456.
[63] Josué, C.: Paris Méd., July 5, 1919, Vol. ix, No. 27, p. 1.

New Apparatus.

A HEMOSTATIC FORCEPS FOR POST-OPERATIVE TONSILLECTOMY.

By Frederick Kingsley, M.D., Boston.

After many attempts to improve on other methods of stopping hemorrhage, I have evolved the instrument presented here. The drawings of this instrument are self-explanatory, nevertheless a brief description of its application may be helpful.

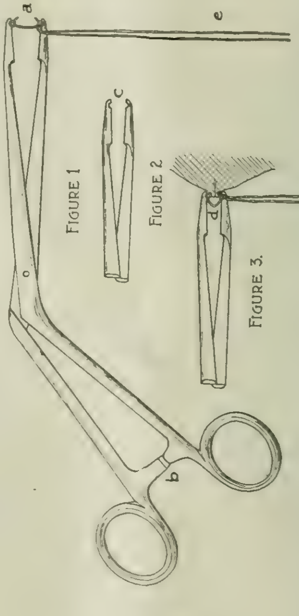
The instrument should first be prepared for use as in Figure 1. This is done by placing a clamp (a) in the groove at the distal end, then closing by scissors movement and locking by means of ratchet (b) which holds clamp firmly in position.

In applying the instrument it is important that it be placed in an easily accessible position. Then, by sponging with pressure, locate bleeding points; grasp these points with the instrument as if grasping tissue with an ordinary forceps. The more firmly the tissue is grasped the more firmly the clamp is inserted. To remove the instrument, release the ratchet, leaving the clamp in position.

To the clamp is attached a silk ligature, the other end of which is fastened by adhesive tape to the cheek, thus eliminating all danger of accident by swallowing.

To remove the clamp after all danger of bleeding is past, insert the distal end of the instrument under the clamp and spread.

The advantages of this instrument briefly are the fact that it is easily inserted, and that with it the clamp can be effectively applied at any point which can be reached by an ordinary forceps.



a. Clamp in position in instrument; b. ratchet; c. groove for clamp; d. clamp in position in tissue; e. ligature.

Book Reviews.

The Don Quixote of Psychiatry. By Victor Robinson. New York: Historico-Medical Press. 1919.

The story of *The Don Quixote of Psychiatry* reveals some phases of the early progress of this science which were encountered by Shobal Vail Clevenger, Jr., a man whose career, although constantly changing and varied, yet contributed to medical science something which a less quixotic personality might have shunned and passed unnoticed. His early life was full of hardship; at first a wanderer in different trades,—a clerk, soldier, hotel keeper, engineer,

—he finally saved enough money to start on his medical career. He attended the Chicago Medical College, and the author's description of his experiences and friends throws considerable light on medical education and student life during the nineteenth century. His early medical career reveals the conditions which then generally prevailed in our insane institutions: corrupt administration, political influence, and too often treatment actually cruel to our most helpless members of society. Clevenger served in various capacities, — pathologist, neurologist, alienist, hospital superintendent,—and took a courageous stand against the abuses with which he came in contact. Continually in opposition to political administrators, he was obliged frequently to seek new fields for his endeavor. The account of his life, as presented in this volume, has both professional and literary interest, revealing the characteristics and achievement of a man not often encountered in medical history.

Experimental Bacteriology and the Infectious Diseases. By Dr. W. Kolle, Frankfurt, and Dr. H. Hetsch, Berlin. Fifth Edition. First Volume. Berlin and Vienna: Urban and Schwarzenberg. 1919.

This volume, dedicated to the memory of Robert Koch, is of interest as the first German medical work to reach this country since the close of the war, and as an example of a type of Teutonic scholarship not likely soon again to find favor among English-speaking peoples. It is the first volume of the fifth, enlarged edition of the well-known textbook by Kolle and Hetsch for students, physicians, and public health officials. It is designed with special reference to the theory of immunity, and in a series of 36 chapters deals successively with bacteriology and its technic, with methods of disinfection, with specificity, immunity, and protective inoculation, with antitoxins and other serological substances, with anaphylaxis, serum diagnosis and serum therapy, and with the infective diseases. In their preface to this edition and to the fourth, which was published in 1916, the authors refer to the difficulties which the war and the revolution put in the way of their work. Nevertheless, the entire range of German literature and the most important French, Italian, Spanish, Russian and English contributions of the period have been thoroughly reviewed; so that in this edition are incorporated particularly the advances in knowledge which have been made during and as a result of the war, especially with regard to cholera, typhus, plague, gas gangrene, influenza, meningitis, and other epidemic pestilences. The book is a useful and valuable addition to the literature of medical science. It is illustrated with seven charts, 42 colored plates, and 135 cuts in the text.

Vaccines and Sera in Military and Civilian Practice. By A. Geoffrey Shera (Hon. Capt. R.A.M.C.). London: Henry Frowde and Hodder & Stoughton. 1918.

An answer to those who are trying to discredit and discourage specific therapy is found in this book. The clinical value of vaccines and sera in civilian and military practice is thoroughly discussed. The merits and demerits of this line of treatment are set down and statistics are drawn from cases actually treated. Of especial interest from the point of view of the present war are Chapters X and XI, in which twenty-five different cases illustrative of the application and results of vaccine treatment in infected gun-shot wounds are submitted for judgment. The introduction by Sir Clifford Allbutt, K.C.B., M.D., F.R.S., a former teacher of the author, considers generally the possibilities which lie in vaccination. The book itself is divided into four sections. Section I—Vaccines—discusses the present position of specific therapy in disease groups. Section II—Sera—includes Anaphylaxis and Serum Disease. Filterable Viruses, Poliomyelitis, Rabies, Cerebrospinal Meningitis, Tetanus, Anthrax. Section III contains notes on special diseases of women and children, and Section IV, dealing with Autoserum Therapy and Normal Serum Therapy, includes as well a provisional classification of vaccines and sera with a glossary and complete table of references.

Psychoses of the War. By H. C. Marr, Lieut.-Col., R.A.M.C. London: Henry Frowde, Hodder and Stoughton. 1919.

One of the serious after-war problems to be met is the care of men whose minds have been injured during the war. The author of *Psychoses of the War* has endeavored to explain the causes of abnormal mental action, to describe the symptoms of disorder and disease, and to make his observation of about eighteen thousand officers and men of practical value in correcting abnormal conditions. In a general introductory section he discusses the borderland of mental disease, obsession, and simulation of mental affections. Mental affections are classified under six general divisions: neurasthenia, psychasthenia, mental deficiency (infantile), mental enfeeblement (adolescent), toxic psychoses, and organic psychoses. In the cases of several thousand soldiers, the exciting causes of neurasthenia and mental affections are analyzed. The nature of the cerebrospinal fluid and a method of examining it are discussed in the appendix. Sixty illustrations show the effects of these diseases, both in facial expression and bodily conditions.

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THE PREVALENCE OF TUBERCULOSIS IN FOREIGN COUNTRIES.

IN many foreign countries, and particularly among the natives of comparatively uncivilized communities where health departments are not adequately organized for checking the spread of disease, the extent to which tuberculosis sometimes affects the inhabitants often reaches the proportions of a scourge. A European periodical, "Tubercle," gives an interesting survey of this disease in various countries of the world, including the Malay peninsula, Egypt, Spain, Austria, Scandinavia, and England. There are still countries in which tuberculosis encounters little resistance, for it is often difficult to help the people because of their fundamental fatalism. The spirit of modern medical enlightenment is beginning, however, to penetrate even the most benighted of regions, and countries which a few years ago were helpless in the event of an outbreak of tuberculosis now are becoming awakened to the dangers of the disease and are showing extraordinary zeal in building up defensive organizations against its spread.

The Malay peninsula presents an interesting situation. There tuberculosis has broken out on practically virgin soil and has become a plague. The mortality rate for Singapore in 1916 was 48.4 per ten thousand of inhabitants, the rate being nearly twice as great among males of the Chinese population as among females. In our own country, infected milk is considered one of the important sources of tuberculosis; in the Federated Malay States, however, some other cause must be sought, as bovine tuberculosis does not exist there. Furthermore, of more than two hundred and fifty thousand hogs slaughtered at the Ipoh abattoirs, not one case of tuberculosis was found. It seems evident, therefore, that the disease is not caused by infected meat, nor by milk, for the reasons that the cows are free from the disease and both children and adults seldom use milk.

In Egypt tuberculosis has become distributed, seldom affecting the lungs, but almost entirely the glands, bones, and joints. It is difficult to undertake any measures of consequence among the natives toward training them to help themselves, inasmuch as patients are imbued with the idea that the disease is a visitation from heaven to be borne with fortitude and patience. Consequently the condition of the patient is seldom really known until the disease is well advanced and treatment is of little value.

In Spain there has been awakened a considerable interest in the subject of tuberculosis. In Austria the mortality rate from tuberculosis increased during 1917. The figure in 1913 was 3 per thousand of population; in 1917 it had risen to 4.1 and by 1918 to 4.2. The ratio in 1913 was three women to four men, while in 1918 these rates were practically reversed. Among young women the increase was about 113 per cent., among children, 186 per cent. Statistics show further increase in the general rate during the first half of 1919.

About a decade ago, there was initiated in Finland against tuberculosis a campaign which included the entire parish. The people were examined and given instructions in regard to methods of combating the disease; laboratory work was undertaken and efforts were made to trace the sources of infection. A second complete examination was made of the whole population last year and the figures offer interesting comparisons. In 1909 there were 28 per cent. of the families with tuberculosis; in 1919 the corresponding figure was 14.6. In 1909 the incidence among the 3200 persons in the parish was 6.2 per cent., now fallen to 2.8 per cent.; among young people in the age group eleven years to twenty, the decrease was from 8.9 per cent. to 2.6 per cent. The experiment showed the advantage of combating tuberculosis in the younger age groups. During recent years in the Scandinavian peninsular attention has been given to the sociological aspect of tuberculosis. Efforts to secure coöperation in research were interrupted by the war, but they have been resumed. In that country the sun is considered as a therapeutic factor of importance, and its substitutes, the electrical arc light and the quartz-mercury light, are used to a considerable extent.

A review of the situation in England shows that before the war tuberculosis administration had been developing and was becoming of great value in the matter of public health. As notification of tuberculosis did not become compulsory until 1913, it was still in its initial stages at the outbreak of the war; but communities were aroused to the importance of the subject and plans were being made on a large scale for the treatment and control of the disease. With the opening of the war the tuberculosis mortality rate in England began to turn from a steadily descending curve to a rising one. The figures for women were approximately seven per cent. higher in 1916 than in 1913, and in 1917, 13 per cent. higher, due in part, of course, to the extension of industrial instead of domestic pursuits. Examination of the total male population for military purposes revealed for the first time the real conditions, and furnished an important and reliable basis for future public health work. What has been discovered under the stress of war conditions should lead nations in all parts of the world to a realization of the need of complete tuberculosis surveys and the establishment of competent organizations to deal with this important health problem.

THE PALMER MEMORIAL.

Among the many demands for help for new endeavors, let us not forget the old. An article in the *Transcript* putting forth the needs of the new home for incurables to be carried on by the New England Deaconess Association, under the name of the Palmer Memorial, leads one to suppose that the sufferer for whom the new home is named spent her last days without that kindly care which only a hospital can afford. As a matter of fact, she died at the House of the Good Samaritan, where she had been a patient from August 11, 1918, to April 1, 1919.

During the year 1919, two hundred and fifty-four cases were cared for as in-patients by this institution. Until the Palmer Memorial Home was opened, the House of the Good Samaritan was the only non-sectarian hospital, exclusive of state and city institutions, such as Tewksbury and Long Island, where incurable cases without funds could be taken. In the annual report for 1919, the secretary of the House of the Good Samaritan makes an appeal for assistance, not only to maintain the beds already in operation, but to add facilities to care for children who, after contagious diseases, are left with weak hearts.

The community should support to its very limit such enterprises as these. The cost of maintenance per bed is small, compared with that in hospitals for the more acutely sick, and from the humanitarian point of view, the money is nowhere better spent.

A CORRECTION.

We regret that several errors occurred in the editorial account in the Journal of July first of the recent meeting of the Massachusetts Medical Society. The meeting of the Council was on June 8 and the report of the proceedings was published in the Journal of June 24. The title of Dr. Cabot's annual discourse, which was published in the Journal of June 10, should have been "Compulsory Health Insurance, State Medicine or What?" The Shattuck Lecture and the Proceedings of the Society were published in the Journal of July 1. The main title of the play given after the annual dinner was "Breaking into the Army." There are two Doctors Frederick E. Jones in the Massachusetts Medical Society; Dr. Jones who has been elected vice-president is the one who lives in Quincy.

MEDICAL NOTES.

Study of Public Health Service for Brazil.—A commission has been granted Dr. A. Neiva, chief of the Public Health Service of the State of St. Paulo, Brazil, for the study of the organization of the Public Health Service in Japan and in the United States, and also of the prophylaxis of leprosy in Norway, the Philippines, and Hawaii.

Election of Dr. Milton C. Winternitz.—Dr. Milton Charles Winternitz has been elected dean of the Yale School of Medicine, to succeed Dr. George Blumer. Dr. Winternitz became a member of the Yale faculty in the fall of 1917 as Professor of Pathology.

Appointments at Washington and Lee University.—The following appointments have been announced at Washington and Lee University: L. J. Desha, Ph.D., formerly professor of chemistry in the Medical College of Tennessee, has been elected professor of chemistry; W. D. Hoyt, Ph.D., formerly associate professor of biology has been made professor of biology and head of the department.

Award of Honorary Degree to Dr. Simon Flexner.—An honorary degree of Doctor of Laws has been conferred upon Dr. Simon Flexner of New York, director of the Rockefeller Institute, by Cambridge University.

Decrease in Populations of France and Prussia.—Official tabulations which have been published recently indicate the comparative decrease in the civil populations of France and Prussia during the past few years. From July 1, 1914. to June 30, 1918, the population of the uninvaded part of France (33,000,000) diminished by 993,440, and that of Prussia (42,000,000 inhabitants) diminished by 312,827. With a population of nine million less than Prussia, France, therefore, suffered a decrease three times as great. Considering the invaded departments, where the birth rate was about zero and the death rate very high, the decrease of the French population appears even much greater.

Infant Mortality Statistics.—Statistics announced by the Census Bureau show that infant mortality rates for 1919 decreased materially as compared with the four previous years. Of the twelve largest cities in the birth registration area seven showed decreases of from 8.4 to 23.4 per cent., while the highest increase was 3.6 per cent. In New York city the death rate of infants under one year of age decreased eleven per cent., as compared with 1918, and was 18 per cent. below the figure for 1915.

A Distinguished Physician.—The late Dr. Charles Daniel McCarthy, former mayor and physician, was said to be "Malden's most useful citizen." Perhaps no worthier distinction could be conferred upon a man, however famous. Dr. McCarthy is remembered as a good and kindly man and a skillful doctor and surgeon, loved and trusted by all. It is said that he never made out a bill for his services during his entire professional career, but permitted his patients to give him what they thought they could afford and often took nothing when he knew that financial resources were very limited. He served his city and his patients in many ways, professional and otherwise.

Institute for Training Nutrition Workers.—Intensive courses for training workers in nutrition clinics have been held recently in Chicago and Atlanta. In the former city the work is given in coöperation with the Elizabeth McCormick Memorial Fund which is under the direction of Mrs. Ira Couch Wood. A class of thirty was held, including dietitians, school nurses, four physicians, two members of school boards and the executives of various child-helping organizations. Seven states were represented in the group. The work consisted of actual participation in their activities; also of lectures, conferences, class discussions and reports. The institute was conducted by Dr. Wm. R. P. Emerson, who was assisted by Miss Mary Murphy, assistant director of the fund, and Miss Michael, nutrition worker in charge of the Chicago Nutrition Classes.

The course at Atlanta was given under the auspices of the Southern Division of the American Red Cross and was attended by representatives of fourteen states. Nearly half the members were workers in the Home Economics Section of the United States Department of Agriculture. The work is under the direction of Miss Mary Arthur, chief dietitian. Miss Warren and Miss Moseley were sent down as advance workers to weigh and measure children and organize clinics. Five hundred children in the various school grades and in one of the city orphanages were examined. The percentage of malnutrition was found to be nearly double that usual in Boston, New York and Chicago, reaching as high as 61% in the Girls' High School and 71% in a colored group.

The instruction was given by Dr. Emerson, assisted by Miss Mabel Skilton, who has charge of field work in Nutrition Clinics for Delicate Children. The six clinics established in this connection will be continued by the Red Cross.

Similar nutrition clinics are to be established this summer in Labrador under the direction of Dr. Grenfell's unit. These are to be in charge of Miss Moseley and Miss Fuller, who were members of the spring institute held in Boston and who have been since its close volunteer workers in Dr. Emerson's nutrition clinics.

Award to Physicians of Honorary Degrees.—A number of eminent physicians have received honorary degrees this year from American universities. The following degrees were awarded by Harvard University.

To Robert Somers Brookings, LL.D.—"A patron and pilot of Washington University, its Medical School, and many other enterprises of great pith and moment; a philanthropist, generous and clear-sighted."

To William Williams Keen, Sc.D.—"A surgical officer in the Civil War, the Spanish War, and the World War—a man whose career in his profession has been one of long and ever rising distinction; the dean of American surgery."

To Hermann Michael Biggs, Sc.D.—"Pathologist and physician; guardian of the public health; who, by his combat with tuberculosis in New York, has rescued countless lives."

To Eugene Hanes Smith, A.M.—"Dean of the Harvard Dental School, who, undaunted by its slender means, has by his devotion through a quarter of a century constructed its building and led the school to the high position that it holds."

An honerary degree of Doctor of Science was conferred upon Alexis Carrel of the Rockefeller Institute, New York, by both Princeton and Brown Universities. Yale University awarded to William Darrach, dean of the medical faculty of the College of Physicians and Surgeons in New York, the degree of Master of Arts.

Buffalo Department of Health.—The annual report of the Department of Health of Buffalo, New York, for the year ending December 31, 1919, states that the death rate for the year was 15.30 per thousand, figured on an estimated population of 475,781, an estimate which it is believed is probably at least 25,000 too low. During the year 1919 there were 12,708 births, making a birth rate of 26.70 per thousand. A considerable number of the deaths were due to influenza and diphtheria. The type of diphtheria was entirely different from any experienced before, both in extent and virulency. There were only 34 deaths from typhoid fever during the entire year. Considerable progress has been made both in the care and treatment of tuberculosis and in the number of cases and deaths, the latter being lower than at any time for years. The total number of new tuberculosis cases reported during the year was 1,301.

The Urologic Division of the Health Department of Buffalo has been particularly active, having given treatment to the following number of cases in health centers, free dispensaries, and clinics during the year: gonorrhea, 2,970; syphilis, 3,151; gonorrhea and syphilis, 211; chancroid, 126; making a total of 6,460. The Wassermanns and the smears by the Depart- of Health Laboratory showed that 11,082 were examined for syphilis, of which 1,799 were positive and 9,285 negative; 1,879 smears were examined for gonorrhea, of which 562 were positive and 1,317 negative.

The Bureau of Child Hygiene has been active in schools and dispensaries, and considerable work has been done in social service, prenatal work, and work among children of preschool age. During the year approximately 30,000 school children were vaccinated. By the city laboratory 99,460 examinations were made in 1919, compared with 20,467 made in 1910. The Bureau of Foods and the Divisions of Animal Industries and Commercial Industries have supervised and regulated milk and food supplies. The Bureau of Sanitation has encountered many difficulties in administering the State Tenement House Law because of the demand for dwellings far exceeding the available supply. The work of the bath houses and laundries has given material help to thousands of men, women, and children who would otherwise be obliged to dispense with this important feature of sanitation.

One of the most important educational features added to the work of the Health Department has been a motion picture machine adapted for slides and films. A film showing the origin and history of venereal diseases has been of benefit to many audiences.

The Tuberculosis Division of the Department of Health has furnished milk and eggs free to those tubercular cases requiring this special food and unable to purchase it. The department also purchased sugar and distributed it at cost to families requiring it for babies.

Increase in Notifiable Diseases in England.—A regulation has been issued recently by the British Ministry of Health increasing the number of diseases required to be notified to the local medical officers of the health. Among the additional diseases now required to be reported are ophthalmia neonatorum, acute encephalitis lethargica, malaria, dysentery, trench fever, acute primary pneumonia, and acute influenzal pneumonia.

Drug Price Changes.—The following announcement has been made by the Drug and Chemical Markets for the week of June 30: There is a well-defined movement toward lower prices in the fine chemical market. Morphine and minor morphine products have been reduced unexpectedly by makers. Refiners of camphor also announce a reduction in price. Menthol is weak and lower. Refined sulphur is higher. Chloral hydrate has been advanced, and caffeine is scarce and firm. Citric and tartaric acids are dull.

Lemon and orange oils are lower in primary markets. It is said that reports of short crops of flowers in Southern France have been confirmed, and geranium and neroli oils are expected to advance in price. Other crops are ample, however, and essential oils dependent upon these supplies are lower.

Linseed oil is weak. Cottonseed oil is slightly lower. There is a downward tendency in castor oil, cocoanut oil, olive foots, refined rapeseed, and crude soya bean oil. Turpentine is lower. Menhaden crude oil and Newfoundland cod oil are lower.

Offers of new crop materials, both foreign and domestic, continue to weaken the crude drug market and especially botanicals. Mandrake root is still declining. Arnica flowers are weak and lower. Alkanet prices continue to decrease. Cloves, poppy and celery seeds and Belgian valerian are lower.

Naphthalene and betanaphthol continue scarce. Other coal-tar crudes are also firm in price. Aniline oil is weak. There has been some shading in sales of paranitraniline. Albumen is weak.

Proposed Hospital for Americans and Europeans in the Philippines.—The closing to Americans of St. Luke's Hospital in Manila has prompted Americans and Europeans of the Philippines to conduct a campaign to raise five hundred thousand dollars with which to establish a hospital for their exclusive use. About one-third of the sum needed already has been pledged. With the progress and advancement of the Filipinos has come a stronger demand for hospital treatment among the natives, and the Philippine General Hospital now is occupied with the treatment of Filipino patients to such a degree that there s very little room left for Americans. Furthermore, as it is under Filipino supervision and management, and its accommodations therefore are made to fit the demands of the natives, the diet and service are not exactly suitable to Americans. St. Luke's Hospital is a mission institution established and maintained primarily for Filipinos, and when it became impossible to care for all who applied for admission, Americans were turned away in order that the Filipinos might be served more adequately.

Schools for the Training of Hospital Attendants.—In view of the difficulty which the city of New York has had in obtaining the services of trained hospital attendants, four training schools for such attendants have been established by the Commissioner of Public Works. These schools are at the City Neurological Hospital, Blackwell's Island; the New York Children's Hospital, Randall's Island; the Sea View Hospital, Staten Island, and the Greenpoint Hospital, Brooklyn. The pupils are being instructed in the principles of hospital treatment and in the care of simple sick and chronic cases. The establishment of these schools should result in a higher type of hospital attendant and also relieve the nursing situation. In many chronic and convalescent cases the trained attendant may serve adequately and thus release many more skilful nurses for other work. As the compensation of attendants will be lower than that required for the graduate nurse, many families who otherwise would be unable to afford competent nursing aid will be in a position to secure the services of the trained hospital attendant. Their instruction will be along broad and useful lines, with opportunities for advanced and specialized training if it is desired.

BOSTON AND MASSACHUSETTS.

Bequest to Lynn Hospital.—A bequest of three thousand dollars was provided for the Lynn Hospital in the will of the late Mr. Edward C. Smith of Lynn.

Massachusetts State Druggists' Association.—At the convention of the Massachusetts State Druggists' Association held on June 23 and 24 at the New Ocean House, Swampscott, it was voted to send a resolution to Congress and to Mr. J. F. Kramer, national prohibition commissioner, requesting a modification of some regulations under the Volstead Act. At present a druggist must have a retail liquor dealer's license in order to mix drugs containing alcohol.

Organization of the Boston Health League.—There was organized on June 30 the Boston Health League, with Dr. William C. Woodward, President; Rev. Michael J. Scanlon, Vice-President; Ellen T. Emerson, Secretary, and James Jackson, Treasurer. On the executive committee were elected Dr. William E. Ladd, Dr. Robert B. Osgood, Louis Kirstein, Miss Katherine B. McMahon, Miss Mary Beard, Seymour H. Stone, and Miss Winifred Rand.

The purpose of this league is to improve the health of the community by better coöperation and coördination among existing agencies, and the further development of that work. The following agencies have agreed to assist in making this plan effective: Boston Metropolitan Chapter, American Red Cross; Instructive District Nursing Association, Jewish Maternity Clinic Association, Massachusetts Society for Social Hygiene, Boston Consumptive Hospital trustees, Baby Hygiene Association, Floating Hospital, Massachusetts General Hospital, Social Service Department; Dietetic Bureau Boston Public Schools; Department of Medical Inspection; Boston Dispensary, Women's Municipal League, Public Health Department, Children's Hospital, and Massachusetts Homeopathic Hospital.

NEW ENGLAND NOTES.

War Relief Funds.—The New England branch of the French Orphanage fund has announced contributions to a total amount of $604,032.64. The sum of $359,871.29 has been acknowledged by the French Wounded Fund.

Clinical Meetings in New England.—At a meeting in Boston on June 27 of the State sections of the Clinical Congress of the American College of Surgeons, plans were made for holding clinical meetings in Massachusetts, Rhode Island, and Connecticut, to be followed by meetings in which the laity in the three states will be invited to attend.

The following officers were elected for the Massachusetts section: Chairman, Dr. F. J. Cotton; secretary, Dr. Charles F. Painter; counsellors, Drs. R. H. Seelye, Springfield; E. L. Hunt, Worcester; S. W. Goddard, Brockton; Dr. R. Hammond was elected chairman for Rhode Island, and Dr. A. N. Allen for Connecticut.

Obituary.

FRANK BYRON BROWN, M.D.

Dr. Frank Byron Brown died of apoplexy at his home in Dorchester July 1, 1920, at the age of 56 years.

The son of David T. and Julia Clark (Prescott) Brown, he was born at North Chichester, N. H., September 3, 1863. After attending the schools of his native town and Pittsfield and Pembroke academies he entered Dartmouth College with the class of 1886, transferring to the Medical School of Maine (Bowdoin) and graduating there in 1887. Dartmouth conferred the A.B. degree on him in 1911 as of the class of 1886.

Dr. Brown practised at Salina, Kansas, from 1887 to 1892, when he settled in Dorchester, joining the Massachusetts Medical Society the following year and becoming at that time instructor in bacteriology and assistant in pathology in Tufts College Medical School. He held this position until 1898, when he resigned to devote himself to general practice.

Dr. Brown was never married and left no near relatives.

Correspondence.

A REPLY TO DR. CHRISTIAN.

Mr. Editor:—

My attention is called to the publication, in your issue of May 20, 1920, of a letter addressed to me by Dr. Henry A. Christian, which appeared in the public press simultaneously with its receipt by me. In justice to everybody concerned I am sure you will be glad to publish my reply. The correspondence closed with Dr. Christian's reply to this letter as it covered practically the same ground as his first letter.

You will permit me, perhaps, to add that anyone who wishes to see the letters received in answer to the inquiry as to present medical practice in prescribing alcohol as a preventive of or remedy for influenza will find them all in the February number of the *Scientific Temperance Journal*. As was to be expected, they represent various viewpoints. Their collection and publication under these circumstances can hardly be considered "agitation either for or against the medical use of alcoholic beverages in the treatment of disease," but rather precisely what we sought in the first place—a cross-section of present medical views and practice as to the particular question submitted. The larger part of Dr. Christian's letter was devoted to another question: the legislative control of medical use of alcohol, which, while important in itself, was not the subject immediately under consideration.

Cora Frances Stoddard.

Boston, Mass., June 25, 1920.

COPY.

February 9, 1920.

Dr. Henry A. Christian,
Peter Bent Brigham Hospital,
Boston, Mass.

Dear sir:—

Your letter of February fourth is received. I should not trouble you with a reply except for the fact that it seems to be based on the assumption that the Scientific Temperance Federation is proposing to advise the public whether alcohol should or should not be used as a medicine. As far as I am aware, no publication or spoken word from the Scientific Temperance Federation has ever done this, for the excellent reasons that we are quite aware that there is still a difference of opinion among physicians on this matter, and, further, are in entire accord with your first proposition that the medicinal administration of alcohol should be determined by the physician.

Allow me, however, closely to link with these statements certain other facts of which you must be cognizant:

(1) There is still an idea widely entertained by the non-medical "laity" that alcohol is a valuable remedy to be kept on the home medicine shelf for any emergency. (2) the liquor interests of the entire world (and I use this phrase "entire world" advisedly) have endeavored to bolster up the liquor traffic by pushing forward extravagant claims for the use of alcohol in influenza. We all recall what happened in this respect in this city last year when health officials were made to appear favorable to the distribution of liquors for this purpose and were compelled to issue statements of the misrepresentations that had been made.

The general public, therefore, is entitled to know the facts as to the medicinal use of alcohol at the present time. The position which the Scientific Temperance Federation has always taken and will continue to take is to say this:

1. All physicians would agree that if alcohol is to be given in the treatment of disease its use should be determined by the competent physician who knows why he is using it, what he wants to accomplish by it, just as is the case with other drugs. Alcohol is not a remedy for self-prescription any more than any other drug.

2. Practically all physicians use far less alcohol in the treatment of disease than formerly. Hospital statistics, of course, show this. A letter from Dr. George W. Gay of this city, dated February 5, volunteered the information that "only about one-tenth of the amount of alcoholic liquors is used in our large hospitals in the case of the sick and injured as was the case when I began the practice of medicine half a century ago."

3. There is an increasing number of physicians who do not prescribe alcohol at all, because they are convinced (to use the words of the resolution adopted by the House of Delegates of the American Medical Association in 1917) that the use of alcohol in medicine "as a tonic or stimulant or for food has no scientific value" and "that the use of alcohol as a therapeutic agent should be further discouraged." Such physicians would probably agree with the action of the last Pharmacopeial Convention in dropping whiskey and brandy from the United States Pharmacopeia which leaves physicians liberty, of course, to use them as "non-official" drugs.

These facts the public is entitled to know to offset the old ideas of lay administration of alcohol and the advocacy of medical use by the liquor interests through clever propaganda.

In the present instance, under the circumstances of this continued propaganda for whiskey in the treatment of influenza, the same public is, I believe, entitled to know that, in general, physicians do not regard the use of alcohol as a preventive of influenza, but rather likely to predispose the user to infection; that physicians believe that the administration of alcohol in influenza should be decided by the physician; that while there are physicians who in special circumstances do carefully prescribe alcohol in some form there are many in this city and in other cities who do not use it. Such physicians apparently act on the basis of opinion expressed in a letter received this morning from Dr. J. W. Schereschewsky, Assistant Surgeon-General of the United States Bureau of Public Health Service, who writes:

> "In reply to your letter of January 30, it is desired to state that in the opinion of this Bureau alcoholic liquors can be regarded neither as a preventive nor a cure for influenza. This Service does not encourage the therapeutic use of alcohol except in special instances as it is believed that in the greater number of instances better results are secured from drugs other than alcohol."

In regard to your criticism of the legislation on this question, in which you express the opinion that the temperance organizations are to blame for not providing for machinery to become immediately effective whereby alcohol could be readily obtained, may I remind you the enforcement bill was before Congress for at least four months before it was enacted, possibly longer. Delay in setting up enforcement machinery lies, therefore, with Congress, not with those who introduced the bills. Second, the bill placed the handling of alcohol as a drug in the hands of those naturally situated in a position to deal with it most intelligently—the druggists and physicians. Physicians are not only permitted to prescribe up to one pint a week, but by the regulation issued under the law, they are allowed to purchase during the year a quantity up to six quarts of liquor which they can administer when they deem it necessary.

Some limitations had to be placed somewhere. If the present arrangements prove not to work satisfactorily, I feel confident that *constructive* suggestions from the medical profession as to how alcohol which they desire to use can be obtained with due regard to preventing beverage use, will be welcomed.

Sincerely yours,
(Signed) Cora Frances Stoddard.

REPORTABILITY OF LETHARGIC ENCEPHALITIS.

Boston, June 28, 1920.

Mr. Editor:—

Early in 1919 the question of the advisability of making lethargic encephalitis reportable was considered by this Department. An investigation and study of the circumstances affecting this proposal were made by the Committee on Preventive Medicine of the Department (contisting of Dr. David L. Edsall, Dr. J. E. Lamoureux, Dr. William J. Gallivan and myself) and as a result thereof it was the opinion of the committee "that it was not desirable at present to add this disease to the list of those dangerous to the public health, because, in the first place, the number of cases of the disease is likely to be very small; in the second place, it has been the experience elsewhere that if the disease occurs at all, its duration is transitory; in the third place, the diagnosis is so difficult to make that the cases reported under this heading would probably cover a wide variety of conditions ranging from tuberculous meningitis to uraemia, and not lethargic encephalitis; and in the fourth place, making this disease reportable would be likely to cause unnecessary public alarm." In view of this opinion, the Department decided that lethargic encephalitis be not added to the list of reportable diseases.

The Committee, however, recommended as an alternative measure that an intensive study be made as to the actual occurrence of the disease, in order to define, if possible, true cases of lethargic encephalitis from other conditions which might simulate it, and steps were taken by the Department to carry out this plan.

Recently, however, the matter of making lethargic encephalitis reportable again became the subject of considerable discussion. The opinion of the Department, as expressed above, remained the same, but was of course, open to conviction. Therefore, on May 15, 1920, the Department requested the Executive Committee of the Massachusetts Association of Boards of Health to confer with it and to make known its views on the matter of having lethargic encephalitis placed on the list of reportable diseases. Following this conference, the Executive Committee of the Association voted "to recommend to the Department of Public Health to request all doctors to report to local boards of health all suspected encephalitis cases, that they may start investigations of such cases."

As stated above, this Department does not deem it desirable or necessary to add lethargic encephalitis to the list of reportable diseases at the present time, but, in conformance with the expressed request of the Association of Boards of Health, the Department does wish to request that physicians report voluntarily to the Department all cases or suspected cases of lethargic encephalitis in order that such cases may be carefully investigated and studied with a view to adding to the present fund of knowledge concerning this disease.

Therefore, it will be very much appreciated if you will give this letter such publicity as you consistently can in the next publication of your Journal, in order that the coöperation of the physicians of Massachusetts may be enlisted in this plan.

Thanking you for your assistance in this matter, I am

Yours very truly,
Eugene R. Kelley,
Commissioner of Public Health.

THE CONTROL OF INFLUENZA.

Philadelphia, June 16, 1920.

Mr. Editor:—

The article entitled "An Exploit in the Control of Influenza," published in your issue of June 10, by Dr. J. Madison Taylor, is suggestive in many particulars. Two of the seventeen preventive measures carried out by Admiral Goodrich and his medical officers appear to me, however, subject to comments of sufficient importance to suggest that a perfectly clean bill of health might have resulted instead of "*few* cases of influenza, *fewer* still of pneumonia" had the data submitted in this letter been available at the time.

To discuss the prophylaxis of influenza and its treatment is opportune, for influenza is said to be endemic in Petrograd and Moscow, and the sanitary control of those cities has been such the last two years as to suggest, owing to the steadily increasing transportation facilities, the possibility of another pandemic next year. In view of this fact, I beg leave also to submit a few lines of thought based on a comprehensive study of the disease (see *New York Medical Journal*, May 15, 1920), for at no time has the knowledge of its pathogenesis and medical control been at a lower ebb, notwithstanding the immense labor devoted to all phases of the question by our ablest investigators.

The two features enumerated by Dr. Taylor that I would modify are No. 4, which states that "every man entering from abroad was sprayed as to mouth, nose, and throat," and No. 8, which reads: "Walking cases played on the baseball field all day." To make this clear, however, the newer views referred to above must be briefly reviewed.

My investigations showed that the Pfeiffer bacillus was the true pathogenic organism of influenza but that it did not act in accord with Koch's postulates. I found that it was *in the pulmonary alveoli, which present all conditions for the growth of the Pfeiffer bacillus, hemoglobin, oxygen, and temperature, that its colonies were developed* precisely as they are in the laboratory, and that these colonies caused therein lesions which led me to identify the disease as a *pulmonary necrotic alveolitis*. That these air vesicles are deeply involved is well shown post mortem. Dr. F. P. McNamara, for instance, who described ninety-five autopsies at the U. S. General Hospital No. 6 by Prof. Winternitz of Yale, in the Boston Medical and Surgical Journal of February 20, 1920, wrote: "The most striking picture and one that is *peculiar to this disease* is the hyaline necrosis involving only the terminal bronchioles and alveolar walls." The cyanosis, upon which so many internists lay stress, and so intense in some cases in my service in the Emergency Hospital No. 2 during the 1918 epidemic, as to give the body a bluish-black color, point clearly also to an asphyctic condition which widespread destruction of the air vesicles clearly explains.

Further study then showed that we were protected to a degree at first estimated at 60% and then (in a report to the French Government, requested by M. Jusserand, June 3, 1920) at 80%, after revision of data, by the nasopharyngeal defences and the ciliated epithelium of the respiratory tract down to the terminal lobules. So perfect is this nasopharyngeal barrier that moderately contaminated air is found completely sterilized after passing through it. This explains the negative results obtained by practically all investigators who attempted to provoke the disease by injecting B. influenzae into the nasal cavities. The germs were destroyed by phagocytes and the mucus of the respiratory passages long before they could reach the alveoli, which alone in the whole tract afforded the conditions necessary for their growth.

Under these conditions are we affording protection by "spraying the nose and throat" as advised in the fourth indication of Dr. Taylor's paper? This is where an important lesson contributed by the World War counsels prudence: It was found that antiseptics, including the newer ones, in solutions sufficiently strong to kill bacteria, also killed tissue cells. In the nasopharyngeal passages, therefore, if antiseptic solutions are too weak they are useless; if strong enough to destroy bacteria they do harm by inhibiting the local protective functions. Other data showed, however, particularly Lambert's experiments, that while *iodine* was very active as a sterilizer in a 1-2000 solution, it promoted cellular activity. Pharmacology also teaches that iodine is the specific excitant of lymphoid tissues, and therefore of phagocytosis. Briefly, our main object should be, from my viewpoint, in influenza as well as in other diseases in which the infection occurs through the nose, throat, and mouth, to employ agents which tend to *enhance the defensive activity of the respiratory tract* instead of those which, aimed at the bacteria only, also kill tissue cells. The war showed, in fact, that immunity was conferred upon workers exposed to certain gases, in hardly perceptible proportions, chlorine, sulphur dioxide and nitrous oxide, for instance, while influenza was reigning all around the manufacturing plants.

Personal tests, however, showed that even a 1 to 2000 solution caused too much discomfort to be used in the nasal cavities, but that iodine fumes fireatly diluted with air, *e. g.*, evolved by heating, then mixed by means of a fan in the proportion of 0.65 gram of crystals, with about 40 cubic meters of air (the size of an average small room) could be inhaled comfortably without irritating the conjunctiva, a sensitive test indicating that the right proportion is not being exceeded. The use of pure iodine fumes evolved by heat directly into the nasal cavities is not only painful but dangerous. Conversely, the weak dilution in air, inhaled while merely sitting in the room, presents the advantage of reaching all parts of the respiratory tract down to the alveoli. As protective agent, iodine is superior to any of the gases evolved in the manufacturing plants, referred to above, and which, as shown by Shuffelbotham, caused a marked decrease of the pharyngeal flora lasting 24 hours after exposure to the gases.

Where for some reason iodine cannot be used, and excitation of the respiratory lymphoid tissues and mucosa be our main purpose, other organic excitants are at our disposal, notably turpentine fumes, also found to immunize workmen in plants using it. The volatile oils, such as eucalyptus, sassafras, etc., might be found experimentally to suffice. A feature worth emphasizing in this connection is that such fumes, used in theatres, schools, churches, barracks, hospitals, cars, and other places where many persons congregate, make it possible for them not only to be kept open during an epidemic, but to serve as *sterilizing and immunizing centers* for the bulk of the population.

The objection to Dr. Taylor's eighth feature, "walking cases" being allowed to play baseball, etc., suggests itself in the light of the above remarks. The familiar fact that young men between 20 and 30 years are by far the preferred victims is readily explained when we take into account their powerful respiratory activity, which causes air contaminated with the Pfeiffer bacillus to reach the alveoli rapidly, *i. e.*, before sterilization of the air can have been completed in their air passages. Baseball and any other violent exercise, and even drilling, as personally observed, can only increase the danger. Again, we know that leaving the sick bed too soon is usually followed by another and often fatal attack of the disease. With numerous alveoli as the seat of active colonies, perfect quiet in bed, by insuring slow respiration, enables the expired air to be sterilized. If, conversely, the patient arises too soon, the increased respiratory activity prevents complete sterilization of the expired current and the inspired current thus carries active germs back to a multitude perhaps of previously unharmed alveoli, thus starting the disease anew—a true autoinfection.

I must crave your indulgence for the length of this letter, on the plea that, while the routine methods of our day, particularly Koch's postulates, have been so sterile in results and have entailed millions of deaths, the newer views submitted seem promising in view of the readiness with which they explain many hitherto obscure facts of fundamental importance.

Charles E. de M. Sajous.

A PHYSICIAN IN THE STATE SENATE.

Worcester, Mass., July 8, 1920.

Mr. Editor:—

May I suggest to the members of the Massachusetts Medical Society, through your columns, that anything they can do to promote the election of Dr. William L. Johnson of Uxbridge to the State Senate will be a help to sane medical legislation during the coming session of the Legislature.

We need a physician in the Senate.

It was my fortune while president of the Society and *ex-officio* chairman of the Committee on State and National Legislation, frequently to meet Dr. Johnson, at that time House chairman of the Committee on Public Health.

He was fully alive to the needs both of the profession and the public on health matters and I never knew him to be on what a physician would call the wrong side of proposed legislation. He was energetic, had great influence with his fellow members on medical matters, and should he be nominated and elected to the Senate would, I believe, have equal influence in that body. Very sincerely,

Samuel B. Woodward, M.D.

RECENT DEATHS.

Major-General William G. Gorgas, former Surgeon-General of the United States army, died at the Queen Alexandra Hospital, London, on July 4. General Gorgas arrived in London from New York on May 19, on his way to West Africa, where he was obliged to abandon his trip because of a stroke of apoplexy, and from the middle of June there was little hope of his recovery. The ultimate cause of his death is believed to have been Bright's disease. Every facility was afforded by the British military authorities for his proper medical treatment and attention.

Dr. Ernest K. Parker died in Springfield on July 8. Dr. Parker had practised in Springfield for 25 years, specializing in nerve and skin diseases. He is survived by his widow and by several brothers.

Dr. Walter W. Scofield died at his home in Dalton, July 6, 1920, at the age of 66. He was born in Albany County, N. Y., and was a graduate of the Albany Medical College in 1882. Settling in Dalton, he joined the Massachusetts Medical Society in 1885, and had practised there since. He was a councilor of the Berkshire District Medical Society for many years and was president of that society in 1899 and 1900. He was a Mason and a trustee of the Methodist church. His widow and one son survive him.

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CONCERNING SO-CALLED ENCEPHALITIS LETHARGICA; WITH SPECIAL REFERENCE TO ITS SEQUELAE.*

By J. W. Courtney, M.D., Boston.

Anyone who has seen much of the plague whose ravages we are about to consider will share with me, I am sure, a keen sense of dissatisfaction with its nosology. That a true encephalitis is the most striking feature in its pathology is undeniable, but that the lethargy which accompanies it is sufficiently outstanding and constant to make it pathognomonic is more than debatable.

The term "encephalitis lethargica" is but a descriptive one at best, and its selection to cover the protean clinical manifestations of the disease-process it is intended to designate is not merely unhappy, but conducive to widespread failures in diagnosis, as I shall presently endeavor to demonstrate.

Upon the historic side of this malady I shall not venture. For aught I know our remotest forebears may have been thoroughly conversant with it. With us its sinister visitation in epidemic form is sufficiently recent and minatory to stimulate the utmost haste to familiarize ourselves to the fullest possible extent with its pathogenesis, pathology and clinical expression, to say nothing of its treatment and prevention.

Pathogenesis.—Is it a bacterial disease and, if so, is it a congener of influenza and poliomyelitis? These are two questions difficult of satisfactory answer. As matters stand, we cannot look to the laboratory for such answer. Except to the most uncritical the current views on poliomyelitis, bacteriologically speaking, are in nowise convincing. And, from the same standpoint, the case of encephalitis seems even more hopeless.

Let us waste no time on this point. In a goodly percentage of my personal observations encephalitis lethargica followed so closely upon the heels of an attack of influenza that I am satisfied that the former is metabiotic to the latter.

Port of Entry.—Assuming that the disease under consideration is bacteriologic in origin, through what channel does the organism find its way into the economy? To my way of thinking the nose and accessory sinuses seem the most logical route.*

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* Paper read by invitation before the Newton Medical Club at the Newton Hospital, May 10, 1920.

The reporter of cases who is satisfied that his history covers every step in the development of a given disease is indeed self-complacent. Such an achievement is quite out of the question for various reasons, of which two are paramount: (1) Memory defects and impossibility of coöperation on the part of the patient himself; (2) lack of dependable observation on the part of his entourage. For these and similar reasons the toxic activities in the nose and accessory sinuses proper of the bacillus of encephalitis lethargica are seldom recorded, and it is not until the cranial contents are obviously involved that the disease excites serious attention and alarm. Be this as it may, the fundamental obstacle to the proper understanding of any disease-process is the too common failure on the part of observers to think in terms of anatomy and physiology.

In the clinical histories of cases of the disease under consideration we are struck by the frequency with which the involvement of certain cranial nerves is recorded and likewise by the order of this involvement. Particularly conspicuous for its susceptibility to invasion is the oculomotorius (third nerve); less so, perhaps, the sixth, seventh, ninth and tenth.

A glance at the anatomic relations of the sphenoidal sinus—to take but a single example—will materially aid our understanding of this phenomenon.

White[1] reminds us that these sinuses vary greatly in size and position, even in the same individual. They may extend outward and backward into the greater wings of the sphenoid to the Gasserian ganglion and have a capacity of twelve cubic centimeters or more. The pituitary body, chiasm and optic nerve are in relation to the superior wall, while externally lie the optic, abducens, oculomotor, trochlear, ophthalmic and maxillary nerves, the cavernous sinus, the internal carotid artery, and the dura of the middle fossa. Killian[2] says, "The blood circulating in the cavernous sinus bathes the whole roof as well as the lateral walls."

Brief as the above anatomic consideration is, it makes very clear the reason for the frequent and early involvement of the third cranial nerve. It does not explain why nearby nerves, particularly the optic, are less frequently involved. There is doubtless some subtle determinant in these cases just as in brain tumors where, of several nerves equally contiguous to the growth, one is invariably spared. Doubtless it is this same not altogether intelligible determinant which, in a given case of so-called encephalitis lethargica, effects a preponderance of toxic activity in those tissues which lie in some particular one of the three cranial fossae. However this may be, we have abundant clinical evidence of such preponderance, a circumstance which has given rise to the recognition of numerous sub-types of the disease.

Pathology. Before we enter upon a consideration of these sub-types and the clinical manifestations which differentiate them one from another, let us consider the pathology of encephalitis lethargica. From the outset we should keep prominently before us the fact that, if this disease is indeed of bacterial origin, the organism is not a pyogenic one. This fact explains two things: (1) The consistent absence of meningeal pus noted at necropsies and (2) the sterility, *in every sense*, of laboratory findings.

On inspecting the brain stem of a recently fatal case, the attention is at once arrested by the universal pinkish appearance presented. This results, as you know, from the injection accompanying acute inflammation and while this injection may be intense throughout, it is often strikingly so in certain loci, notably in the medulla, midbrain and thalamus. Noteworthy is the fact that this vascular engorgment is more pronounced on the venous than on the arterial side, that small hemorrhagic areas are here and there observed about the smaller veins, that minute thrombi with necrotic changes in adjacent tissues may likewise be discernible, that cellular infiltration takes place in the adventitial lymph spaces which may contain accumulations of leucocytes and plasma cells, and that a certain degree of gliosis may be found in and about the nuclei of affected cranial nerves.*

Upon microscopic examination the pia mater shows considerable injection and some degree of round cell infiltration, and all the cells of affected nuclei show pathologic alterations of varying intensity. In them one may find moderate cloudy swelling with eccentric nucleus and obscurations of the Nissl bodies or a fairly advanced chromatolysis in which the more central layers of tigroid bodies have disappeared. Some degree of neuronophagia may also be found, and ameboid glia cells may be clustered around the motor cells when the latter reach an advanced stage of degenerative change.

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* Attention is hereby called to an interesting paper by Loewe and Strauss, which has appeared since this paper was read. Its title is, "The Diagnosis of Epidemic Encephalitis: Value of Nasopharyngeal Washings and of Cerebrospinal Fluids," Jour. A. M. A., Vol. lxxiv, No. 20, pp. 1373-75. Among the conclusions arrived at by the above authors the following is most significant: "The Berkefeld filtrates of nasopharyngeal washings from cases of epidemic encephalitis produce characteristic lesions when injected intracranially into rabbits. This finding has served us as an aid to diagnosis in 78 per cent. of the cases so tested."

* For a part of this pathologic picture the author is indebted to the valuable paper of Tilney and Riley, Neurolog. Bull., Vol. ii, No. 3, pp. 106-135, March, 1919.

Now, if we keep constantly in our minds a vivid picture of the potentially widespread character of the pathologic process just described and give due consideration to the fact it may attain its maximum intensity in such tissues as lie within some one of the three chambers of the cranium; if, furthermore, we never lose sight of the fact that a brain cell exposed to the action of a toxic agent may give outward expressions to this action, which vary greatly in duration, character and intensity according as the toxic agent is exciting a reaction which is purely irritative or one which is actually degenerative, we will have no excuse for failing to recognize each and every one of the protean clinical expressions of this pathologic process so far as they are traceable to the encephalon. But this is not the end of this chapter. When we come to the matter of symptomatology, we shall see that, in certain cases, there are clinical signs which suggest an implication of the spinal cord. And I will say right here that I have observed—although never associated in the same case—intense hyperesthesia of the abdomen and extremities, a curious semigranular thoracic and abdominal eruption and urticarial wheals—observations which impel me strongly to the belief that, in last analysis, so-called encephalitis lethargica is in reality a systemic toxemia of which the resultant brain inflammation is the most striking and dangerous expression.

Symptomatology. The action on the human cerebrum of the toxin of encephalitis is strongly analogous in many respects to that of alcohol upon this same organ. In persons not thoroughly accustomed to the use of alcohol its toxic action upon the psyche varies strikingly in character and intensity, according to the individual and the amount ingested, as we all know. Certain persons with low power of toleration are made very drowsy by even two glasses of ordinary red wine. In others, somewhat more habituated, this same amount stimulates the flow of ideas and facilitates their expression by lowering the threshold of inhibition. With a progressive ingestion of the toxin and a consequent progressive lowering of the threshold of inhibition, ideation ultimately attains a degree of rapidity little short of vertiginous, and expression is strongly tainted with incoherency. Incidentally, in an intermediate stage, the bestial side of human nature makes itself clearly manifest. In the chaos of ideas which throng consciousness at this stage are discernible the germs of crimes against Nature and of physical violence carried, in certain cases, to the extreme of actual murder. It is but a short step from ideation to motion. The stimulus which excites the former easily overflows into cortical regions which excite the latter. Consequently in a fairly early stage of alcohol poisoning we encounter—in addition to intensive vociferation—facile and boisterous laughter, diplopia, inordinate gesticulation, or that further expression of motor excitement which we term dancing. It is in a somewhat more advanced stage of this same motor excitement, coupled with its natural moral inhibition, that moral delinquencies and acts of physical violence are perpetrated. And with still further ingestion of the poison we may encounter convulsions, coma and death. In the more chronic forms of this poisoning we observe deluded and hallucinated states, dementia and neuronic degenerations, central as well as peripheral.

With this picture of the protean action of a circulating toxin—alcohol—in our minds, let us study that of "encephalitis"—likewise circulating—and we shall see a marked similarity. Remember that the latter toxin has practically virgin soil, so to speak, for the exercise of its irritative and destructive activities and that in a given case we have, at least at the outset, no knowledge of the stricken individual's powers of toleration. As a consequence, we observe in the psychic sphere reactive variations which are striking and noteworthy. In a certain number of cases the reaction takes the form of a lethargy which may grow progressively profound and become the outstanding clinical feature. Here let me caution you, however, that in no case—except, perhaps, in an agonal stage—must you expect true coma or stupor. In practically every case I've seen there are times when the patient is spontaneously bright and alert mentally or can be easily aroused to that state; and when so aroused is perfectly capable for a brief period of coöperating with the examiner. I have also seen cases which might be termed "walking cases," in which the lethargy was not sufficiently profound to keep the patient continuously in bed. These facts, in and of themselves, show how unwise it is to stress the lethargic phenomena of the disease under consideration. Indeed, it is a recognized fact that the toxin of encephalitis may produce conditions in which lethargy is merely episodic. In these conditions the psyche may for the most part be so congested with conflicting ideational complexes, and the synchronous play of visual and auditory hallucinations may be so lively, that the patient presents the picture of acute and violent mania which, in turn, may culminate in epileptoid convulsions or fatal status epilepticus. In other cases the psychic reaction is much less violent in expression. In these we encounter depression, delusional states and a certain degree of dementia.

On the motor side the toxic manifestations show curious and interesting groupings. This fact has expanded the terminology of the disease in a way that seems to me rather unnecessary and undesirable. To illustrate this point let us take the case of the *polioencephalitic* type, so called. This is characterized by a general myasthenic state coupled with a serial palsy of cranial nerves. Evidently, the authors who adopted the term "polioencephalitic" to designate this syndrome were guided in their choice by the necropsic discovery of marked nuclear deneneration. The objection to their interpretation of their observation is this:—Cranial nerve palsies, particularly that of the third nerve, occur much too early in the course of the disease and disappear much too promptly to permit the conclusion that their early presence is due to nuclear degeneration. To my way of thinking it is much more logical to explain the behavior of these palsies on the basis of *nerve block*, the toxin finding its way into the nerve sheaths by imbibition and inhibiting conduction for longer or shorter periods. I regard nuclear degeneration as a late manifestation.

In another clinical type the motor phenomena are so combined and of such a character as to present a picture in practically every respect identical with that of Parkinson's disease. It is startling, I assure you, to observe the rather rapid development of this syndrome in a young subject. But its interpretation, like that of the *cataleptic* type of which I shall presently speak, is simple if we keep ever in mind the nature and distribution of the underlying pathologic process. In the Parkinson type we encounter the characteristic mask-like expression, the asthenia, the rigidity and the peculiar tremor. The matter of locomotion deserves special consideration. The gait is shuffling and somewhat festinating, and nearly every patient of this type volunteers the information that he is conscious of a decided propulsive tendency and that he can run or even waltz more readily than he can walk.

Coming now to the cataleptic group we find the outstanding clinical feature to be, at the outset at least, a more or less general but intermittent rigidity of the body which has this striking characteristic:—The limbs can readily be moved from one position to another. Where the temperature shows a rise of only trifling extent, it is a common error on the part of clinicians to mistake the above syndrome for hysteria, and this diagnostic ineptitude is favored, especially in the case of young females, by the primarily intermittent character of both the rigidity and the lethargy, and the absence of significant alterations of the reflexes.

There is another striking type of the disorder, the so-called *choreic,* which deserves our most serious consideration. In this type the possibility of diagnostic error is also great. We may generally prevent such error by assuming in a given case that a subject, particularly a vigorous male, past the second decade of life, who exhibits choreic movements which are practically universal and of a high order of intensity, is not the victim of St. Vitus' dance. On close study, evidence of the underlying encephalitis will be found either in cranial nerves or the psychic sphere.

For intelligent comprehension of the myospasms—tonic or clonic—which characterize the three clinical types just considered, allow me to revert to and emphasize a point already brought out in connection with pathology, *i.e.,* when motor nerve cells are continuously exposed to the action of a circulating toxin, the muscles directly under their control exhibit reactions which vary uniformly according as the result of the toxin is irritative, partially degenerative or completely disintegrative. Now, if we apply this principle to the myospasms under consideration, their understanding is not at all difficult. Where the toxic action is purely irritative the spasm is naturally tonic and intermittent, as in the early stages of the cataleptic type above described. Where there is only a slight degree of degeneration, and this limited to certain cellular elements, a constant state of unstable equilibrium obtains and clonic spasms result, as in the Parkinsonian type. And with a somewhat intense degenerative reaction we get choreiform movements of the most violent order. The advance, under prolonged and intensive toxic exposure, of cellular degeneration and functional annihilation is most interestingly demonstrated in the cataleptic cases. If in such cases the disease process is at all prolonged the muscle spasticity gives way to a true hemi or diplegia of a flaccid order, the tendon reflexes become greatly exaggerated, and there are present ankle-clonus and the Babinski phenomenon together with other phenomena indicative of organic implication of the pyramids. This progression is strikingly demonstrated in a case now in this hospital.

Where the cerebellar-ponto-medullary region is mainly involved, there is usually present nystagmus and some degree of involvement of face, tongue and soft palate, associated with week-long acceleration of heart-beat and respiratory movement, incoördination of extremities and diminished or absent knee-jerks.[*]

Tilney and Riley describe anterior and posterior poliomyelitic types. With regard to the anterior type they cannot be said to have made out a very strong case. Their sole criterion for differentiation from ordinary poliomyelitis is the presence in a given case of profound and prolonged somnolence. In the posterior type, of which they describe but a single observation, the cardinal symptoms appear to be lethargy, ophthalmoplegia and zoster-like involvement of one side of the face and a segment of one limb.

In view of all that precedes one can readily see how difficult it is to follow conventional lines in an attempted description of encephalitis lethargica. *Onset*—The onset is generally rather abrupt. There may be such prodromes as headache, vertigo, vomiting, malaise and lassitude, but, in my own experience, diplopia is by far the commonest symptom to first attract the patient's attention, and it is not unusual for it to appear while he is walking on the street. *Sex*—The incidence of the malady seems to me to be no greater in the one sex than in the other. *Age*—Early life furnishes by far the largest quota of victims. In fact, the new-born is attacked with sufficient frequency to impel Tilney and Riley to dwell with particularity upon a *neonatorum* type of the disease. In the *Journ. A. M. A.*, March 13, 1920, Margaret Schulze[3] has an interesting paper on the disease among pregnant women, which shows that the incidence among them is not strikingly high. In general, I think it may safely be said of both sexes that susceptibility decreases after the fifth decade. *Temperature*—Pyrexia is not an outstanding feature of encephalitis. Cases are reported in which no febrile movement whatsoever was observed. The general average is 101 or 102. Sudden elevations, even to 106 and 107, have been observed. These, however, are apt to be followed by equally sudden declines. *Reflexes*—The behavior both of the tendon and cutaneous reflexes is, very naturally, dependent upon the exact anatomic situation and the intensity of the lesion. In many cases they show no significant changes. *Duration*—In the present state of our experience it is extremely hazardous to venture a dogmatic pronouncement on these two matters. The course of the disease is varied like its clinical manifestations. In certain cases it progresses steadily to an abrupt termination; in others there are remissions of notable duration and, in a final group, outbreaks occur in new areas after seeming recovery. In speaking of duration one must be particularly guarded. What may be termed the acute stage may run its course in comparatively few days or it may drag along for nine or ten weeks. When we have said this, we have said all that is really warranted. *Seasonal Influence*—The incidence of the disease, like that of influenza, is greatest between autumn and late spring. Sporadic cases may occur in any season. *Differential Diagnosis*—By reason of the potential involvement of extensive cortical areas and adjacent cranial nerves, encephalitis may simulate, at least superficially, a variety of diseases. There is, however, very little danger of going wrong in diagnosis if we bear in mind certain fundamental facts already set forth, make the closest possible scrutiny of clinical phenomena presented, do our thinking in terms of anatomy and physiology, and invoke the aid of dependable laboratories. *Prognosis*—This must be considered from two points of view: First, the prognosis *quoad vitam*. This, in a general way, may be said to depend upon the particular encephalic site upon which the disease chances to exert the maximum of its toxic activity. Sinister is the presence of profound and prolonged lethargy, although this phenomenon, in and of itself, by no means precludes survival. The situation is graver still when a psychomotor reaction to the toxin manifests itself through epileptic or maniacal states, or a combination of the two. And a fatal issue practically always results in cases characterized by violent and incessant generalized choreiform movements. It is needless to say that when deep lethargy is combined with marked involvement of bulbar nuclei, survival is the exception. In such cases exitus is usually due to cardiorespiratory paralysis. Mortality among pregnant women appears to be particularly high; among infants very low. Mortality figures must, for the present at least, be accepted with considerable caution. They are only too manifestly the product of relatively limited personal experiences. Such figures will be of no practical value until massive groups of cases representing the different clinical types of the disease have been correlated and their histories studied analytically.

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[*] In the Journal of the American Medical Association, Vol. lxxiv, No. 19, p. 1315, Dr. Williams B. Cadwalader of Philadelphia, calls attention to another symptom of encephalitic involvement of pons and medulla observed by him in two cases, in one of which the clinical diagnosis was confirmed at autopsy. This symptom—sympathetic ophthalmoplegia—is due to involvement of a tract which traverses the dorso-medial region of the pons and medulla and contains oculo-pupillary fibres. It is characterized by pupillary contraction, narrowing of the palpebral fissure and slight retraction of the eyeball. In view of the diffuse character of the encephalitic process, the symptom in question may be bilateral and, in consequence, the narrowing of the palpebral fissure and pupillary contraction may be overlooked.

Second, the prognosis *quoad restitutionem ad integram* is a matter which, in its entirety, cannot possibly be given at this time. I think it safe to say, however, that the cranial nerve palsies and the hemi- and diplegias, which are commonly observed during the acute and subacute stages of the disease, practically always disappear after a period which may vary from a few days to many weeks. I also feel safe in saying that we may, as a rule, look for a complete disappearance of the delusional states, depressions and dementias (real or apparent) which also characterized the earlier stages of certain cases. On the other hand, are we at present warranted in looking forward confidently to the ultimate passing of certain other clinical phenomena which are about to be discussed? This is a matter so intimately associated with that of treatment that they cannot very well be handled separately.

In entering upon this final phase of the subject, permit me to turn your attention once more to certain points in the pathology of encephalitis. You may remember that I laid particular stress upon the potential involvement of the entire encephalon by this process and that I held the partial degeneration of motor nerve cells caused by its action responsible for the myospasms—tonic and clonic—which form an integral part of its clinical picture. Incidentally, you will recall that, in discussing this picture I drew your attention sharply to the presence, well in its foreground, of the paralysis agitans complex. My present reason for reverting to these myospasmic manifestations is that, after undergoing a curious metamorphosis, they tend to persist and, in consequence of this pernicious tendency, they block all our present efforts to establish an ultimate prognosis.

Like other observers, I have seen the Parkinsonian syndrome of encephalitis entirely disappear, but with me this issue has been the exception rather than the rule. Repeatedly I have noted in cases of this type a most striking transformation in the character and behavior of its muscular manifestations. A single case, briefly cited, will illustrate the point under consideration. It is that of a married woman aged, at the time of the onset of the disease, 35 years. This was in January, 1919. The onset itself was of noteworthy rapidity. Paresis of the right third nerve associated with somnolence and slight febrile movement were the initial clinical manifestations. Within a relatively short time, however, the picture was an absolute counterpart of that of paralysis agitans. For a matter of several months it remained unchanged save for the disappearance of the third nerve paresis with its accompanying diplopia. About that time the following metamorphosis began to manifest itself. The mask-like expression, the muscular rigidity and the pea-rolling tremor gradually vanished, only to be replaced by universal clonic myospasms. On close examination these spasms betrayed the following characteristics: (1) Corresponding muscles on either side of the body were synchronously affected; (2) the spasm was both rhythmic and cyclic, and each muscle exhibited two or three contractions before the spasm passed on to the next in the cycle. In this connection it is interesting to note that the order of the spasms was not at all conditioned by muscular contiguity. The intensity of the spasm may be judged by the fact that the periosteum in the neighborhood of the lower attachments of the anterior tibial groups, particularly on the left, became exquisitely sensitive from the constantly recurrent pull on these attachments.

All during this time the patient was wont to be very drowsy in the afternoon. A sense of propulsion was fairly constant, and she could walk fast, run or dance more easily than she could walk slowly. The gait was not truly festinating. The patient herself described it as "hitchy." What she meant may well be imagined if we do no more than to take into consideration the presence of intense rhythmical spasms of the dorsal flexors of the toes and the extensors and adductors of the thighs. The reflexes were and, for that matter, still are equal and lively but not pathologic.

Latterly considerable improvement has been noted in various respects. The daytime drowsiness has entirely disappeared and the intensity of the myospasms has materially diminished,—to such an extent, in fact, that the periosteal soreness above referred to has disappeared and the hands can be used for needle work. But the gait is still "hitchy," the propulsive feeling still persists and the patient still contends that she can run or dance better than she can walk. None of the spasms has entirely disappeared.

In other cases these persistent clonic myospasms are by no means so widely distributed. Their effects are none the less bizarre, however. In a patient I saw with Dr. William V. McDermott of Salem they were mainly confined to the lower extremities. They were slow and rhythmic as usual, and the movements produced in the limbs were distinctly athetoid and serial. These would start in the toes of either foot and produce a succession of gyrations of gradually widening excursion, the whole limb meantime trending upward until it became absolutely vertical. In a few moments this limb would descend to its horizontal position on the bed and a similar performance would begin in the other limb. The reflexes and all forms of sensibility were normal.

In another patient, a vigorous man of 25, the following interesting cycle of myospasms was observed many months after the passing of the acute stage of the disease. At regular intervals, as this patient walked about, the head would be suddenly and sharply rotated to the left, the right arm would execute a sabre-sweep movement across the chest and the right thigh become adducted to the point of overlapping the left. In a few moments the spasm would cease and locomotion become normal until the advent of the next spasm cycle. Here again sensation and reflexes were entirely unaltered.* In still other patients I have seen the spasms were limited to the flexors of the thighs, a condition which brought about a sort of intermittent "goose-stepping" when walking was attempted. It is needless, I am sure, to recall again to your minds the fact that a thorough understanding of the pathology and encephalic distribution of the disease process underlying these spasms makes clear their varied distribution, to say nothing of their character.

In view of our ignorance of the exact nature of encephalitis, our method of dealing with it is perforce empiric. In its very early stages we may be called upon to combat pyrexia, restlessness, delirium or mania, according to the type with which we are dealing. In all cases it is our natural function to maintain a healthy condition of the skin, to sustain nutrition and favor elimination through the regular channels. Common sense dictates all these things, and I am sure that everyone in my audience has his own peculiar way of going about their accomplishment. I shall offer no suggestions on this score. I will, however, call attention to the fact that Tilney and Riley report that in certain cases good results follow repeated lumbar puncture. They recommend the withdrawal of from 10 to 20 cc. of the fluid every three to five days. The procedure seems eminently logical.

During the convalescent period these same authors extol the action of suprarenal residue in doses of five minims by mouth three times a day after food, in combating the asthenia commonly observed at this time. As an adjunct they suggest the hypodermic injection of strychnia cacodylate gr. 1/60 every day, either with or without the arsenate of iron. I have not chanced to use either of these remedies. I generally advise a prolonged rest cure of the Weir Mitchell order. This is not only desirable but imperative in cases where implication, even of slight extent, of the cardio-respiratory centres has been a feature of the case. For the myospasms above described I have obtained the best results from the use of the fluid extract of conium in doses of from 3 to 15 drops after meals and at bed time.

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* In no [illegible] [illegible] the [illegible] associated with [illegible] the slightest degree of [illegible] of [illegible].

In one or two severe cases I have seen the myospasms disappear entirely. This outcome is, I fear, exceptional. In a rather large group which I have been following for over a yea there is, on the whole, improvement. Whether or not there will ultimately be complete recovery and, if so, how long it will take, I do not pretend to know.

REFERENCES.

[1] White, Leon E.: Loss of Sight from Retrobulbar Neuritis Due to Posterior Accessory Sinus Disease, with Report of 17 Cases. BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. clxxxi, No. 16, pp. 483-491, Oct. 16, 1919; and No. 17, pp. 505-510, Oct. 23, 1919.

[2] Killian: The Accessory Sinuses of the Nose and their Relation to Neighboring Parts, 1904.

[3] Schulze, Margaret: Encephalitis Lethargica in Pregnancy. Jour. A. M. A., March 13, 1920, pp. 732, 733.

LETHARGIC ENCEPHALITIS.

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LETHARGIC ENCEPHALITIS, or epidemic encephalitis, which is a better name to give to this disease, the objection having been raised that it is the patient who is lethargic and not the disease, was first observed as following in the wake of the epidemic of influenza which swept over middle and southern Europe in 1890.

It became epidemic in Italy and Hungary, and was characterized by the same symptoms most frequently seen today; namely, paralysis of certain cranial nerves and lethargy. This epidemic was rather mild.

Bassoe,[1] in his paper on epidemic encephalitis, states that as early as the beginning of the 18th century, observers noted the coincidence of epidemic catarrhal disease with an epidemic of sleeping sickness. He quotes Camerarius, who describes a grippe epidemic in Tübingen in 1718 and who mentions a "sleeping sickness" in connection with it; a French medical historian mentions epidemics of catarrhal fever with soporosité" as having occurred in Germany in 1745, in Lyons in 1840 and in Milan in 1802. Lepecq de la Cloture in 1768 describes a "coma somnolentum" after the grippe. Whether these earlier accounts refer to the same disease as ours, or should be interpreted as meningitis, is, of course, impossible to say at this time.

The American pandemic of 1890 seems not to have been accompanied by encephalitis; at least, no mention is made of this disease in any of the public reports.

When, in 1917, during the Great War, influenza became pandemic in Europe, an epidemic of encephalitis was observed in Austria by Economo of Vienna, who gave it the name of "encephalitis lethargica." Its mortality was high. In the spring of 1918 this disease was observed in France and England, and in the fall of the same year in this country.

The first case seen in this city, to my knowledge, occurred in the County Hospital in the winter of 1918-1919. Since then, cases have been observed by many physicians. The following three cases were seen by me during the past winter:

MENTAL SYMPTOMS, LETHARGY, BILATERAL PTOSIS, TEMPERATURE.

J. H., a male, was sent on December 13, 1919, to Mount Airy because he had become unmanageable at home. He was a coal dealer by occupation, thirty-four years of age, born in Russia, married, with four children, no history of miscarriages in the wife. His family history is of no importance.

In his personal history, two facts stand out as worth mentioning. He stated repeatedly "Last year, some doctor told me I had syphilis." This he claimed to have contracted from a girl in Kremenitz, Russia; that he had an initial sore and then a breaking out on his body. The other item is that he had influenza in July or August, 1919.

Patient is a short, stocky man, well built and well nourished, very restless, his attention difficult to hold and very flighty. He is troublesome and stubborn. His speech is rapid, but shows no defect and no aphasia. Physical examination, with the exception of the neurological, was negative. His knee jerks were somewhat exaggerated. There was a slight positive Romberg. The pupils were unequal, the left larger than the right and reacted only slightly to light, while the right reacted normally to light. The blood Wassermann on December 18 was plus 3, plus 3. The spinal Wassermann on the same date, negative. Blood Wassermann December 31, plus 3, plus 3. Spinal Wassermann, same date, plus 1, negative. No increase in globulin and cell count and a colloidal gold curve of 0012200000. Urine, negative. Eye ground, negative.

The clinical course of the disease was marked by gradually increasing drowsiness, which was in striking contrast with the restlessness and occasional stubbornness which the patient showed during the first ten days of his stay at the hospital. During the last week, he slept more or less constantly and had to be fed by tube. The only new neurological symptom which developed during this time was a marked bilateral ptosis and a bilateral total pupillary immobility. His temperature ranged from 99 to 101.4. He was taken home on December 31 and died the next day. No necropsy was obtained.

A provisional diagnosis of atypical general paresis was made on the strength of the history of lues which this patient gave and was held even after negative spinal fluid was reported by the laboratory.

An uneasy diagnostic conscience made us consider seriously the possibility of brain tumor, although very little pointed in that direction. An x-ray picture of the head proved negative, and the true diagnosis was only made when the patient was reported dead after leaving our hospital. I believe it should have been made on the triad of symptoms: Eye symptoms, lethargy, and rise in temperature.

LETHARGY, CATATONIA, KERNIG, AND STIFF NECK, EYE SYMPTOMS, TEMPERATURE, SOME INVOLVEMENT OF PYRAMIDAL TRACTS.

The next case was seen on December 12 and 13 in consultation with Dr. George Sibbald. M. S., a married woman, fifty years of age, had one son, no miscarriages.

Her family and personal history are of no interest, except that during the early part of the summer of 1919 she had an attack of influenza which kept her in bed for about four or five days. After this attack, she showed some change in character and disposition. She sold a rooming house which she had owned for some time, because she became dissatisfied, and moved to a different part of the city. She soon was sorry for her action and talked a good deal about the mistake she had made.

As time went on, she seemed to become forgetful, at times drowsy, and acted strangely. On several occasions when some of her old friends called and their visit had been announced, she failed to go to meet them, staying in her room instead.

About December 1, while in her bathroom, she suddenly complained of feeling weak and had to be assisted downstairs to her quarters by a boarder in the same house. She had to lean heavily on this woman. She went to bed and passed gradually more and more into a condition of torpor, from which she could be aroused and then would answer questions correctly. Her rectal temperature rose to 102 on different occasions. Most of the time, she lay motionless in bed and showed no initiative. This, and the lethargy, led to a diagnosis of cerebral thrombosis being made. She was examined in consultation December 12 and her condition was, briefly, as follows:

Right pupil irregular and smaller than left. Both pupils react to light. On opening the mouth, lips do not open so widely on the left as on the right. Right side of palate rises higher than the left. Rigidity in neck present, but not very marked. Slight Kernig on both sides. Tendency to rotate head to the right. Both upper extremities rigid, left more than right. There is no paralysis and patient is able to move all extremities when urged. Both knee jerks exaggerated, left more than right. Positive Gordon and Oppenheim on right, not on left. Abdominals absent except for the right lower. Patient assumes a stereotyped position in bed and is catatonic. Patient dull and apathetic, but on questioning, complains of frontal and occipital headache. Incontinence of bladder and bowels. Optic discs show no change. Raised hyperemic spot on the left wrist, size of a quarter. Large raised hyperemic, slightly hemorrhagic spot on the right side of the back, just below the scapula. S. B. P., 140; D. B. P., 90. Laboratory findings: White blood count, 18,600; differential blood count, polys. 70%; lymph, 20%; large mons. 5%; trans. 4%; eosin 1%. Cerebrospinal fluid, globulin, negative. Cell count, no cells found. Colloidal gold, 11100,00000. Wassermann blood and spinal both negative.

The patient died a few days later and although a necropsy was asked for, it was not obtained.

MUSCULAR JERKING, BULBAR SYMPTOMS, CATATONIA, LETHARGY, EYE SYMPTOMS, TEMPERATURE.

The third case, H. J., a young girl fifteen years of age, who was employed in a bank, was seen in consultation with Dr. C. F. Gale. The mother states that the patient had an attack of influenza during the winter of 1918, and another attack in March, 1919. After this last attack, she would have spells of extreme nervousness. In the summer, she had an attack of smallpox. She was then well until about December 1, when she began to complain of pains in her chest and back. Her shoulder muscles were painful, especially at night. There was no headache and no temperature, but the patient was very drowsy. She stayed home for three or four days, but as she seemed a little better, at the end of this time she returned to her work in the bank for a week. During this time she was nervous and flighty and would frequently retire to the rest-room to sleep. About December 11, she came home complaining of feeling tired and exhausted. She had been in bed ever since. During this time she has slept more or less continuously. Was apathetic and talked only when questioned, but then gave correct answers. She moved about voluntarily only rarely. There was present, however, during the last days at the bank and during the first five days of her stay in bed, considerable twitching of the arms and jerking of the legs. Three days ago, she began to have difficulty in swallowing, so that fluids would run out of her mouth. When the jerking disappeared, there was some stiffness of her legs and arms which increased, so that at the time of her examination, she was quite spastic and showed marked catatonia. There was no paralysis. For the last two days she has been able to control her sphincters.

Examination on December 24 showed the following status: Patient very apathetic, but consciousness appears to be clear. Forehead wrinkles more on the left than on the right. Eyes closed promptly when she was asked to close them. Pupils about three millimeters in diameter, equal and regular. React to light and to accommodation. Partial ptosis of both eyes. Yesterday there was said to have been a slight horizontal nystagmus; not present today. Eyes converge, tendency of right to turn inward. Drooping of the mouth on the right. Tongue protrudes only between the lips. Considerable rigidity of the limbs. No paralysis. Right foot held in position of talipes equinus. Reflexes—Right and left biceps present. Right and left triceps absent. Both knee jerks absent; on the previous day the right was still present. Slight plantar reflex on the right; stronger on the left. No Gordon, Oppenheim, nor ankle clonus on either side. Abdominals present. There are occasionally clonic contractions of the right arm distal to the elbow. Slight rigidity of the neck. Kernig reported to have been present on both sides yesterday is absent on both sides today. Eyegrounds normal. Temperature, 100.5 per rectum. Pulse, 110. Respiration, 28. Blood pressure, 128-80. A_2 and P_2 both accentuated. Heart sounds otherwise normal.

Laboratory examination: White blood count, 10400. Blood Wassermann, negative. Spinal fluid—no increased pressure. Cell count, 6 per cubic millimeter. Globulin negative. Wassermann negative. Colloidal gold, 00000,00000.

This patient was markedly improved in three days and reported by the physician in attendance to be entirely well on January 1.

These cases are fairly typical of encephalitis as it has been described by many observers. They present the typical symptoms of lethargy, eye symptoms and rise in temperature. The face of all three patients was masklike and expressionless. In addition they illustrate some of the more unusual symptoms. The first case had marked mental symptoms—hallucinations and delusions and, at first, confusion. Lethargy developed, but the patient could at all times be roused to answer questions. The two other cases had marked catatonia—holding the arms in any position in which they were placed for minutes at a time, and some meningeal symptoms—Kernig and stiff neck.

Case 2 had a mild reactive depression, following her breaking with an old, established habit, that of looking after her rooming house, which had probably nothing to do with the later disease. This patient also had symptoms pointing to an involvement of the pyramidal tracts, the spasticity being more marked on the left side, the toe signs present only on the right.

Case 3 had marked bulbar symptoms in addition to the eye symptoms, indicating that the entire brain stem must have been invaded by the pathological process. She also had involuntary muscular contractions which, from the description given by the attending physician, were choreic in character.

The symptomatology, as reported, can be divided into general and localizing symptoms. Of the general symptoms, the mental hebetude is probably the most striking. The patient becomes more and more somnolent and, eventually, spends almost all his time in bed in profound apathy or sleep. It must be remembered, however, that the double ptosis which is frequently present in connection with apathy or sleep, may simulate sleep when the patient is actually awake. Usually, no spontaneous movements are produced, but some cases have periods when automatic, purposeless movements or stereotyped movements are performed.

Involuntary movements[2] of the face, tongue or limbs, sometimes athetoid, at other times choreic in character, have been described. Some patients have the appearance of paralysis agitans on account of the mask-like expression of the face and the character of the tremor, which is arrested by voluntary movements. It is, in general, characteristic of these involuntary movements that they do not interfere with the correct performance of voluntary movements. Occasionally, periods of restlessness and even excitement have been observed. Catatonia or flexibilitas cerea is a frequent symptom. Hallucinations, delusions and some confusion occur, while loss of sphincter control is a frequent symptom and probably indicates the general lowering of the level of mental activity. Characteristic of the disease is that, in spite of the pronounced lethargy, the reactions of the patients in acts and words are usually remarkably accurate and rational.

The temperature may be normal throughout, or it may show a moderate rise.

Meningeal symptoms, as some stiffness or pain in the neck or a Kernig sign, are not altogether rare. They are, however, not very marked and not frequent.

The localizing symptoms most frequently refer to the nuclei of the eye muscles. There may be present external or internal ophthalmoplegia, paralysis of accommodation and indistinct vision, diplopia, ptosis, either bilateral or unilateral, complete or incomplete. The pupils may be dilated or contracted fixed or normal in reaction or eccentric in position. Strabismus also has been observed and mystagmus and inability to sustain occular movements, which may be the only defect.[3]

The lower cranial motor nuclei are affected next in frequency, and if the facial is affected, this accounts in part for the mask-like features and the lessened play of the facial muscles so frequently mentioned in the case histories; although some of this must be laid to the indifference which is part of the lethargic state. The tongue, palate, pharynx and larynx may become involved and the patient present the typical picture of bulbar paralysis.

The limbs are much less frequently involved and when this occurs it is due to lesion of the pyramidal tracts in the brain-stem, rather than lower down in the cord. The limbs are always spastic and there is no wasting or loss of tendon reflexes, as in poliomyelitis.

The Babinski sign is sometimes found and the abdominal reflexes may be affected, but there is no typical constant grouping of the symptoms.

Subjective or objective sensory symptoms are rare.

The cerebro-spinal fluid has been examined in most of the recorded cases. No organisms have been found and cultures have been negative. Morphologically and chemically, it has also been nearly always normal. Pleocytosis has been absent and if present, has been a moderate lymphocytosis. Lange's colloidal gold reaction gives negative results. The Wassermann reaction also is negative.

These spinal findings are rather surprising on account of the prevailing perivascular infiltration and the frequency with which small patches of meningitis have been found. But in the cases with more marked meningitis, a few of which have been reported, the fluid shows typical alterations, as in increased globulin reaction, leucocytosis and a meningitic colloidal gold curve.

The duration of the disease is variable, some cases ending fatally in a few days; others recovering in about two weeks and some lasting weeks and even months. Recovery is apparently complete, although a longer time would have to elapse in order to determine whether permanent results, as, for instance, epilepsy, may not follow. When the pupils have lost their reactions, they remain stiff for a long time.

The pathological changes consist macroscopically in the oedema and congestion of the meninges seen on the surface of the brain. There are also minor patches of meninges and minute subpial hemorrhages. On section, the basal ganglia and the pons are seen to be the principal seat of the encephalitic process. Microscopically, there are hemorrhagic foci with lymphocytic infiltration of the small vessels. These foci are found mainly and most abundantly in the midbrain and the pons, but may occur anywhere in the cerebrum, cerebellum and spinal cord. There is also congestion and thickening of the leptomeninges, perivascular infiltration with leucocytes and plasma cells.

The cerebral substance itself shows a similar perivascular infiltration, affecting the nuclei of the mid brain, of the pons and the medulla and the basal ganglia, less markedly the cortex and the cerebellum. The hemorrhagic foci are seen to be very much more abundant than appeared to the naked eye. The nerve cells themselves show chromatolysis and changes in contour. The neuroglia shows proliferating cells, especially around the vessels.

Etiologically, nothing definite is known. Organisms have been described by different observers. In the earlier work on this disease, Pfeiffer's bacillus has been isolated from the areas of hemorrhagic softening, the cerebrospinal fluid and the meninges by Nauwerk in '95, Trouillet and Esprit in '95, and Pfuhl in '97. Von Wiesner claims to have isolated from cases studied during the epidemic of 1917 a gram positive diplostreptococcus, which he claims produced somnolence when injected into apes.

Recently W. W. Hala and Cyril M. Smith[4] of Brooklyn, report a gram negative, motile bacillus, unidentified, but probably belonging to some intermediate class of the colon typhoid-enteritidis group.

Nosologically, there still seems to exist a disagreement among the various investigators as to the true place of this disease. The weight of evidence seems to point to epidemic encephalitis being a distinct disease, while others claim that it is identical with polioencephalitis.

Bassoe[5] states that the etiologic relation of this disease to influenza rests on the above described coincidence of the two epidemics and he suggests that it may itself be a cerebral form of influenza, or that it may be caused by a separate virus, which, in order to become active, must have been in contact at one time or another with that of influenza. Some of the English investigators take the same stand. F. G. Crookshanks of London speaks of the historical evidence "as to the clinical affinity and epidemiological liaison between epidemic catarrhal fever or influenza and lethargic encephalomyelitis." He is inclined to consider this disease as identical with so-called anterior poliomyelitis or polioencephalomyelitis. He states as he says, on high bacteriological authority, that the organisms found by Von Wiesener are indistinguishable from Roesenow's diplococcus which has been found in poliomyelitis. This statement is contradicted by others.

Typical cases of the two diseases differ widely in their symptomatology. There is a more marked prodromal stage in encephalitis. It also affects all ages and shows no preference for children. Its maximum incidence occurs in winter and spring, while August and September is the season when poliomyelitis is most frequently observed. The lethargic element, so striking in the disease which is the subject of this paper is never so marked in typical cases of polioencephalomyelitis. Meningeal symptoms are more frequent in the latter disease, where the fluid is frequently quite early opalescent and shows marked pleocytosis. Inoculation experiments have been made in various cases, and the results were very striking in the virulent Australian epidemic, which had a mortality of 70 per cent. The virus produced typical lesions, not only when inoculated into monkeys, but also into sheep, a horse and a goat. This is at variance with the results obtained with the virus from poliomyelitis, which affects only monkeys.

In poliomyelitis the blood shows marked leucocytosis and only a very slight one in lethargic encephalitis. It is perhaps worth mentioning that the three cases reported all gave a history of having had influenza at different times preceding the onset of encephalitis, although one should here remember the natural tendency to diagnose during and for some time after an epidemic any similar disease as a case of the prevailing epidemic.

Dr. Farquhar Buzzard, in a lecture delivered before the Medical Society of London, states that lethargic encephalitis is undoubtedly an entirely different disease than acute poliomyelitis.

The diagnosis is easy to make in typical cases during an epidemic and rests on the presence of cranial nerve palsies, lethargy and rise of temperature with a negative spinal fluid. But at times it offers the greatest difficulties.

The treatment which was used in the one case under my observation which has made a fairly rapid recovery, consisted in intravenous injections of sodium salicylate twice daily, with the internal administration of hexamethylenamine. It is, of course, impossible to state whether this had any effect whatever on the process.

REFERENCES.

[1] Bassoe, Peter: Jour. A. M. A., Vol. lxxii, p. 971, April 5, 1919.
[2] Lancet, No. 4 of Vol. ii, p. 118, July 19, 1919.
[6] Wilson, S. A. Kinnier: Lancet, Vol. ii, p. 7. July 6, 1918.
[4] Hala, W. W., and Smith, Cyril M.: Archives of Neurology and Psychiatry, Vol. iii, No. 2, p. 160, February, 1920.
[5] *Ibid*: Page 97.

DIAGNOSIS AND TREATMENT OF TUBERCULOSIS OF THE GENITO-URINARY TRACT.

BY ARTHUR H. CROSBIE, M.D., BOSTON.

THERE is nothing particularly new to bring forward in this paper. However, a résumé of the means we have today to arrive at an accurate diagnosis can do no harm, especially as one still sees occasionally a surgeon who when he finds acid fast bacilli in the bladder urine is content to remove the kidney on the side where he can feel a mass without further study. I know of one case where this was done and the enlarged kidney proved to be a normal hypertrophied kidney and the dead kidney was left with fatal results.

Tuberculosis of the kidney presents many difficult problems for the urologists to solve. We will consider it first.

Symptoms. In most cases there are many points in the history which point to tuberculosis of the kidney. The most prominent symptom is irritability of the bladder. This occurs in all cases where the disease is near the kidney pelvis and there is a discharge of bacilli into the urine. This almost always produces tuberculous ulcerations about the ureteric orifice on the infected side with resulting bladder irritability. I know of nothing that produces a more severe cystitis than tuberculous ulcers of the bladder. In many cases the bladder can hold not more than 20 or 30 cc. of urine. In a small number of early cases where the disease is confined to a small area of tuberculosis in the cortex, there may be no bladder symptoms. As a rule, though, it is a safe guess that where a bladder holds 200 cc. of fluid without pain the case is not one of renal tuberculosis.

In taking the history of these cases the story of old healed tuberculosis elsewhere in the body is always suggestive. Bone tuberculosis is very frequently associated with renal tuberculosis. I have just seen a man who had tuberculous epididymitis (left) twenty years ago. Four months ago he began to have frequency. Examination revealed right renal tuberculosis. Of course, in many cases no history of a previous lesion can be obtained, but one always feels that somewhere there is a concealed focus.

Pain in the kidney region is not a marked symptom in renal tuberculosis. In fact, not infrequently the only pain complained of is in the region of the well kidney, no doubt due to the increased work thrown on this kidney. Occasionally, where there are large acute abscesses in the diseased kidney, there is severe pain and fever. Investigation by Spooner[1] of Boston and others has proved that this is not due to a mixed infection as was previously taught, but by the tubercle bacilli alone. Repeated cultures from acute tuberculous kidneys of this sort have revealed a pure growth of the tubercle bacillus. The only cases that I have seen where there was a mixed infection was in three kidneys that had previously been opened and drained.

The effect of renal tuberculosis on the general health varies a great deal. It is not uncommon to see advanced disease of one kidney in a person who is robust and apparently in perfect health, aside from the bladder symptoms. On the other hand, the patient may present all stages of emaciation. In 1916, I removed a kidney from a woman aged twenty-nine, who weighed only sixty-six and one-quarter pounds at the time of operation. She is now double that weight. If both kidneys are infected, of course the effect on the health is more marked. Where the process is acute and there is a febrile reaction there is usually loss of weight and strength.

Although red blood cells are usually present in the urine, it is rare that there is enough blood to call the patient's attention to it.

Of all symptoms, frequent urination is most marked, and it is this that generally brings the patient to consult a physician. This frequency is due, as stated above, to disease of the bladder and also to an actual polyuria.

Physical Examination. This may or may not lead one in the direction of an accurate diagnosis. In many cases the diseased kidney can be felt, in some the good kidney alone can be palpated. There may or may not be spasm over the affected side. Tenderness over the bladder is occasionally found where the disease is extensive.

In women, occasionally, the diseased ureter can be felt, by vagina, as a grisly cord. There is usually no change in blood pressure.

Examination of Urine. This, of course, is very important. If acid fast bacilli are found in a sterile specimen a good start has been made toward a diagnosis and all that is left to do is to find which side is affected and to make sure that the other side is normal. In many cases, however, it is impossible to find acid fast bacilli in the bladder urine and I have seen cases that were proved later to be tuberculous where guinea pig inoculation was negative. The urine is usually light colored, turbid, the amount of albumin, as a rule, is not very large; the sediment contains many pus cells and usually a few red blood cells, occasionally many. Casts are not frequent. Cultures from the bladder urine not infrequently show growth other than the tubercle bacillus. It is important to remember this to compare with what we get from the urine after catheterization of the kidney.

Radiographs. The importance of radiographs in the diagnosis of renal tuberculosis is coming more and more to be felt. To be sure, in many cases the radiograms are negative, but where there is much caseation as where there are large abscesses filled with cheesey material, one is very apt to get suggestive shadows. I have recently seen a case where the x-ray helped a great deal. This was one where there were a few shadows in the cortex of the kidney which resembled stones. This represents a form of renal tuberculosis where the disease is far removed from the pelvis and where the bladder symptoms were slight and the urine negative, except for a few pus cells. I have known of two similar cases in the past where the radiographs showed shadows in the cortex resembling stones. On operation these shadows were found to be calcified areas not resembling tuberculosis. In both cases the calcified bodies were shelled out with difficulty. One developed miliary tuberculosis following the operation and the other, after having drained a long time from the incision, had the kidney removed and it was found to be tuberculous. Therefore, in cases where the radiographs show shadows in the cortex, the greatest care should be made to rule out tuberculosis, and not being able to do so, I should recommend letting such shadows alone. Pyelograms are important, of course, to make sure that shadows are in the substance of the kidney and not in a deep calyx.

Pyelograms. There is nothing distinctive in the pyelograms in tuberculosis of the kidney. The appearance does not differ materially from a pyelonephritis of some other organism. The ureter itself will at times show strictured areas, but this is not pathognomonic.

Cystoscopic Examination. This, of course, is of prime importance. To one who is familiar with the cystoscope there is something about a tuberculous bladder that differs from all other forms of cystitis. Not infrequently, at first glance, one is able to guess accurately that it is tuberculosis and further, to tell what side it is on. Many times there will be an area of ulceration about the ureter on the affected side, while the ureteric orifice on the other side may appear perfectly normal, as also may the mucous membrane about the well ureter. As I have stated before, the tuberculous bladder is most irritable and this makes catheterization of the ureters extremely difficult. In many cases it is necessary to dilate the bladder gradually with some mild antiseptic, such as mercuric chloride 1-50,000, for some days before it is possible to get the bladder to hold enough to allow you to get the ureters. Several years ago I made nineteen attempts before I was successful in getting both ureters and then discovered that the process was double. If it is found that the bladder does not respond readily to dilatation, spinal anesthesia should be used. This is much better than ether, as ether checks the excretion from the kidneys and renders the test very unsatisfactory. Spinal anesthesia does not affect the kidneys and does take away the sensitiveness of the bladder. The bladder can be dilated up to the point where bleeding begins. I have a man in the hospital now on whom I made four attempts and Dr. Chute made one. We were unable to see either ureter. The bladder was so sensitive that even with the local anesthesia, not more than 30 or 40 cc. could be held in the bladder. After attempting for two weeks to dilate the bladder gradually, this was given up and we gave the man spinal anesthesia. Under this, 150 cc. of boric solution was retained in the bladder and both ureters were catheterized with the greatest ease. There were severe ulcerations about the right ureter and none about the left. As we expected, clear straw-colored urine flowed from the left side while that from the right was light colored and very turbid. This illustrates a point that I wish to emphasize particularly. Repeated examination of the bladder urine failed to show tubercle bacilli. Smears from a turbid urine, from the right side, showed no tubercle bacilli, but cultures from this urine, which was full of pus, showed *no growth.* It has been my experience, and it is confirmed by the admirable work of Spooner, that no growth from a ureter catheter specimen where there is much pus means tuberculosis. Repeated cultures from the kidney urine where tubercle bacilli were found showed no growth. The opposite is a safe guess, too. If cultures from a ureter catheter specimen show growth other than tubercle bacillus the disease is almost invariably not tuberculosis, provided the kidney had not previously been opened and drained. Operation on the case mentioned above showed a typical right tuberculous kidney, tubercle bacilli being found in the kidney abscesses. More prolonged study of the urine from the affected side would doubtless have revealed acid fast bacilli. In some cases there are so many small ulcers and pits that it is impossible to tell just which is the ureter. In these cases it often helps to inject subcutaneously 10 cc. of a solution of 0.4% indigo carmine. In about ten minutes this so colors the urine that the ureters can be easily located by the dark spurts. The presence of any leucocytes on the side that is supposed to be well should make one hesitate about operating until you are absolutely sure that this kidney is not also infected with tuberculosis. In case of doubt, it pays to inject a guinea pig and wait the result. In examining the sediment of the urine, there is a simple procedure that helps a great deal at times and that is to wash the sediment with distilled water. If there is much blood present this helps a great deal by lakeing the red blood cells so that they do not obscure the leucocytes and bacteria.

The function test with phenolsulphonephthalein is helpful, but it must be remembered that in some cases the time of appearance will be earlier on the diseased side than on the well one, although the total amount excreted is pretty sure to be less.

After the diagnosis is made there is only one safe procedure and that is nephrectomy, providing that the process is unilateral. If it is bilateral there is nothing left but hygienic treatment. Even with double tuberculosis of the kidney a patient may live on for several years. I have one man that I have under observation for three years and I cannot see that he has changed much in that time.

Anesthesia. I feel that the anesthetic of choice is gas oxygen. The reason for this is that even though we may not have found it, there is so apt to be latent tuberculosis of the lungs that may be flared up by ether.

Operation. I will not enter into the operative details, but will take up a few points of especial interest. A tuberculous kidney is very apt to be adherent to the peritoneum. It is not uncommon in removing one to tear a hole in the peritoneum. I have done this several times and have never had any trouble arising from it. In one case where the kidney was very low and had previously been opened and drained, I tore a large hole in the cecum. I sutured this at once and the patient healed readily. The question of the treatment of the ureter is still in debate. Some prefer to bring the end into the incision and suture it there, and others prefer to follow the tuberculous ureter to the bladder. Except in extremely early cases, the ureter is always tuberculous. The stiff grisly ureter, in fact, is pathognomonic of tuberculosis of the kidney. No matter how far this ureter is followed there will still be some tuberculous tissue left for nature to take care of. The farther the ureter is followed the more is the risk in the operation. Personally, I like to cut the ureter where it is most convenient and treat the ends with carbolic acid and alcohol and drop the ureter back to take care of itself. I think that most genito-urinary surgeons use this procedure today. As to drainage, I prefer not to drain. The wound is more apt not to heal if it is drained. If the wound once becomes tuberculous it takes months to heal. Of course, in some cases that are sewed up tight, the wound will break down and become tuberculous. I have never yet had one that did not eventually heal. I had one where the whole incision gapped wide open and took nearly a year to heal. In this case, as in most of this sort, the large open wound had no bad effect on the patient's general health.

After Treatment. The irritability of the bladder, which before operation is usually the prominent symptom, begins to improve very soon after operation. This improvement continues often as long as a year. As a rule, the tuberculous ulcers of the bladder disappear of their own accord. If at the end of a few months the bladder has not regained its normal capacity it can be greatly improved by gradually dilating it once or twice a week with some bland antiseptic, such as mercuric chloride 1-50,000. Aside from the bladder treatment, the only thing to do is to look after the general hygiene. I like to have patients sleep out of doors and take the cure the same as patients with tuberculosis elsewhere.

Tuberculosis of the Bladder. In my experience this is always secondary to tuberculosis of the kidney. The treatment is directed to the kidney.

Tuberculosis of the penis is very rare. The only case I have ever seen was in a ward visit with Dr. Edward L. Keyes. The condition is most apt to be confused with epithelioma and can be differentiated surely by microscopical examination.

Tuberculosis of the Epididumus. This condition, in my opinion, is always associated with tuberculosis of the seminal vesicles and prostate and in the treatment of the epididymis this should not be lost sight of.

The onset is gradual and usually without pain. Frequently the condition is not noticed by the patient until the pressure of a beginning abscess causes discomfort. The diagnosis as a rule is not difficult. The process is confined to the epididymis and vas. The epididymis is thickened and not tender, frequently nodular. The vas is thickened and firm, resembling the feel of a tuberculous ureter. The diseases to differentiate it from are chronic inflammation, other than tuberculosis, gumma, and new growth. A patient often has to be watched for some time before one can rule out absolutely a chronic non-tuberculous inflammation. The previous history of a urethritis is of help. The vas in non-tuberculous infection is rarely much thickened. In this condition, the thickening gradually subsides while that of tuberculosis increases or remains stationary. Gumma, as a rule, is not difficult to rule out. There is the history, the Wassermann reaction and then the fact that gumma almost always affects only the testicle, while the tuberculosis is always primary in the epididymis and only affects the testicle rarely and then late in the disease. New growth is sometimes very confusing. I saw one case where there was marked thickening of the epididymis and cord. It resembled tuberculosis, except that though the cord was thickened it was not so firm and grisly as in tuberculosis. This turned out to be a new growth of embryonic origin. When in doubt it is wise to remove a small piece, under local anesthesia, for examination. Where there is a question of new growth, delay in making a diagnosis may be fatal.

In most cases of tuberculosis of the epididymis rectal examination will reveal the same trouble in the prostate and vesicles. It is my belief that the two are always associated. I believe that the prostate and vesicles are the primary focus in the genito-urinary tract and that the epididymitis is secondary, as it is in gonorrheal epididymitis.

Treatment. Unless there is active tuberculosis elsewhere in the body, keeping the patient pulled down, most cases do very well under hygienic treatment. I make sure that a man obtains out-of-door work, gets plenty of rest, fresh air, and good food. The old treatment of sending a man away on a sailing vessel for two years was and is good treatment. It is quite true that abscesses form in the epididymis in a great many cases, but these soften down and rupture spontaneously and, after having drained for some time, heal. As a rule there is not much discomfort with these.

I am very much opposed to epididymectomy for tuberculosis of the epididymis. The primary focus in the vesicle is not attacked and I feel that more harm than good is done by the operation. If one is to do anything in an operative way, I agree with Dr. Quinby[2] that a radical operation should be done, removing the epididymis, the entire vas and vesicles. Most men do so well under hygienic treatment that I feel it is not advisable to put a man through the radical operation. I have known two cases to die of miliary tuberculosis following an epididymectomy and one following the radical operation. Until we have more proof that the radical operation is advisable I shall continue to treat tuberculosis of the epididymis and vesicles purely by hygiene.

REFERENCES.

[1] Spooner, L. H.: The Bacteriology of Tuberculous Kidneys, Jour. Med. Research, Vol. xxxix, No. 1, September, 1918.

[2] Quinby, W. C.: The Treatment of Genital Tuberculosis in the Male, Jour. A. M. A., Nov. 30, 1918, Vol. lxxi, pp. 1790-1795.

Book Reviews.

Stedman's Medical Dictionary. By Thomas Lathrop Stedman, A.M., M.D. Fifth Edition. Revised. New York: William Wood & Co. 1918.

The fifth edition of Stedman's *Medical Dictionary* includes over fifteen hundred new titles and substitutes, for many of which, in addition to the system of abbreviation by initials which has been adopted by writers on war medicine and surgery, the war has been responsible. In this edition, an extensive revision has been made of the pharmaceutical terms in order that the titles and doses of all the official preparations may conform with the latest editions of *Pharmacopoeia* and *National Formulary.* This volume is an illustrated dictionary of words used in medicine, including dental, veterinary, chemical, botanical, electrical, life insurance, and other special terms; anatomical tables of the titles in general use, and those sanctioned by the Basle Anatomical Convention; official pharmaceutical preparations, chemical and therapeutic information about mineral springs in America and Europe, and a comprehensive list of synonyms.

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BOTULISM.

DURING the latter part of 1919 numerous cases of poisoning, and a number of deaths, were reported in different parts of the country as a result of eating olives, or certain canned vegetables. These deaths were caused by botulism—literally "sausage poisoning."

Botulism, according to a bulletin prepared by the Department of Medical Information of the League of Red Cross Societies, and made public by the American Red Cross, has in the past usually arisen from consumption of home-preserved food which was not correctly packed, but events such as those noted above had led recent investigators to conclude that infection with botulism through commercially packed foodstuffs, while rare, is by no means impossible.

The obvious method of protection against botulism, which has a high mortality, is to refrain from eating preserved foods which are noticeably spoiled. The presence of the Bacillus botulinus is usually indicated by a sour odor, or by some other plain evidence that food containing it is unfit to be consumed, while the presence of the bacillus has been noted only in foods which have been prepared for preservation in cans, jars, or other containers, ordinary prudence demands the rejection of any comestible which, by smell, taste, or appearance, shows signs of being spoiled.

Bacillus botulinus was first isolated by van Ermengem in 1896. It is of the anaerobic type; that is, it cannot exist where oxygen is present. When taken into the human system, it lodges in the digestive tract, and the toxins produced there spread over the body. Inasmuch as the first symptom of botulism do not appear until it is too late to employ the stomach pump or emetics, and since the only treatment is a serum of doubtful value, the fight must be devoted mainly to keeping up the sufferer's strength and combating the various symptoms as they occur.

Botulism is somewhat similar, in its early symptoms, to encephalitis lethargica, a disease which is very much in the popular mind at present; and an epidemic of the latter disease in England in 1918 was wrongly diagnosed as botulism, supposedly due to the war diet of the people. The onset of both diseases is acute. The first noticeable symptoms are similar, and consist of dimness of sight, often followed by coma. But there the resemblance ends. Encephalitis produces a slight rise of temperature; botulism usually does not. There are rarely two cases of encephalitis in the same household, while botulism usually affects at the beginning several people, all of whom have partaken of infected food. Finally, death from botulism usually occurs within four days, accompanied by varying symptoms while encephalitis tends to produce prolonged coma, and to become in a sense chronic.

Food poisoning, which also may result from eating bad food, is not associated with the presence of the botulinus bacillus, but in the past, in the absence of exact methods of diagnosis it often was confused with botulism Figures for the United States show only 150 cases of botulism, with 97 deaths, in the whole history of the disease here.

Food containing the Bacillus botulinus may be either animal or vegetable, and in many cases the death rate from eating poisoned vegetable products has been excessively high, due probably to the fact that preserved vegetables often are served raw, as in salad, while meats are more apt to be cooked, with a constant diminution of the virulence of the botulinus germ. German statistics of several epidemics show mortality in cases of consumption of infected vegetables to be as high as 52.3%, that from smoked meat and bacon being 19%, from sausage 17%, and that from fish and lobsters only 10%, the mortality tending to diminish in proportion to the probability of the food being cooked before consumption. A curious fact in relation to the epidemics of botulism arising from the eating of poisoned olives is that in cases where the olives had been washed before they were eaten, the disease appeared in milder form, or did not attack those persons who had taken the precaution to wash their olives.

The sterilizing methods adopted by the corporations which distribute preserved foods seem largely to eliminate the possibility of botulinus infection. It is usually in the cases of products of isolated unscrupulous packers, or where foods which have been rejected by the original consignees are sold at low prices in second-rate stores that there is danger of botulism. The bacilli of this disease may develop in home-preserved foods through insufficient sterilization of the food or of the container; or through the use of faulty methods of excluding air from the sealed container, thereby allowing putrefaction.

The great majority of the commercially prepared foods are absolutely safe when they leave the packing plants; but the public should insist on getting undamaged containers, since even the best of these receptacles may be damaged by careless handling. The proportion of safety in tinned foods is shown strikingly by an experiment carried on at Harvard University, where a lunch club experimented over a period of 16 months with 1750 cans of food. Absolutely no ill effects were discovered as a result of this investigation.

The botulinus bacilli are not found in raw foodstuffs, or in products which have been correctly prepared. Observance of scrupulous care in preserving food for future consumption eliminates the possibility of the spreading of botulism, which, while it fortunately is not of frequent occurrence, nevertheless is one of those maladies with which medical science has not yet definitely learned to cope.

VOCATIONAL TRAINING IN HOSPITALS.

The radical changes which are taking place in the treatment of psychoses offer hope and promise for the future welfare of patients suffering from nervous and mental disorders. In promoting this work, the problem of dealing with ex-service men has brought to our attention the need which exists for increased effort to evolve some method by which patients may be benefited permanently and made economically independent. Until recently, a psychotic papatient was discharged as socially cured when he no longer presented a-social or anti-social symptoms in the hospital environment; he was sent back to the very environment in which his psychosis developed, and, though dependent on his family for support and with no definite productive employment, it was expected that he should be able to adapt himself satisfactorily to his surroundings. In the majority of cases a relapse was the inevitable result of this course of procedure.

An experiment being made by the Federal Board for Vocational Education at the Government Hospital for the Insane, St. Elizabeth's, Washington, D.C., and at Manhattan State Hospital, New York City, may solve the problem to the better advantage of the individual and society. The plan of the Federal Board is to start a man's vocational training while he is still under treatment in a hospital, continue this training in a training center under proper supervision, and return him to his home, not only with a trade, but with work which will render him economically independent and furnish a stimulus for increased endeavor. It is probable that more often than not the adjustment to social environment will remain permanent under these circumstances. If the results obtained by these first units be encouraging, similar units will be started in all hospitals caring for a sufficient number of ex-service men with nervous and mental disorders.

BACTERIA AS A FACTOR IN FUTURE WARS.

An interesting possibility to be considered by the leaders of future wars is the use of bacteria as a weapon against enemy forces. In speaking before a company of British and American scientists at a dinner tendered in his honor by the officers and board of governors of the American Hospital in London, this possibility was suggested by Dr. Charles H. Mayo of Rochester, Minnesota. Is it not feasible to imagine that the next war may be a contest decided by invisible organisms, a war conducted by the dropping over cities of capsules of bacteria which have the most destructive effects? In this event, it would be the physician's task to prevent casualties from the germ bombs of enemy powers, and doctors, rather than military experts, would become the field marshals of future wars. Such conduct of future warfare is appalling to contemplate, yet not inconceivable.

MEDICAL NOTES.

The Rockefeller Institute for Medical Research.—The Board of Scientific Directors of The Rockefeller Institute for Medical Research has announced the election of Dr. Winthrop J. V. Osterhout as a member of the Board of Scientific Directors to succeed Dr. Theodore C. Janeway, deceased.

The following promotions and appointments have been announced also:

Dr. Alfred E. Cohn, hitherto an Associate Member in Medicine, has been made a Member.

Dr Peyton Rous, hitherto an Associate Member in Pathology and Bacteriology, has been made a Member.

Dr. Donald D. Van Slyke, hitherto an Associate Member in Chemistry, has been made a Member.

Dr. Francis G. Blake, hitherto an Associate in Medicine, has been made an Associate Member.

Dr. John H. Northrop, hitherto an Associate in Experimental Biology, has been made an Associate Member.

Dr. James H. Austin, hitherto an Assistant in Medicine, has been made an Associate.

Dr. Harry W. Graybill, hitherto an Assistant in the Department of Animal Pathology, has been made an Associate.

Dr. William C. Stadie, hitherto an Assistant in Medicine, has been made an Associate.

The following have been made assistants: Miss Helen L. Fales, Chemistry; Dr. Philip D. McMaster, Pathology and Bacteriology; Miss Marion L. Orcutt, Animal Pathology.

The following new appointments have been announced: Dr. Harry Clark, Associate Member in Pathology and Bacteriology; Dr. Pierre L. du Nouy, Associate Member in Experimental Surgery; Dr. Paul H. deKruif, Associate in Pathology and Bacteriology; Dr. Lloyd D. Felton, Associate in Pathology and Bacteriology; Dr. Rudolph W. Glaser, Associate in the Department of Animal Pathology; Dr. Carl A. L. Binger, Assistant in Medicine; Dr. Ralph H. Boots, Assistant in Medicine; Dr. Louis A. Mikeska, Assistant in Chemistry; Dr. Charles P. Miller, Jr., Assistant in Medicine; Dr. Eugene V. Powell, Assistant in X-ray; Dr. Leslie T. Webster, Assistant in Pathology and Bacteriology; Dr. Goronwy O. Broun, Fellow in Pathology and Bacteriology; Miss Katharine M. Dougherty, Fellow in Pathology and Bacteriology; Dr. André L. E. Gratia, Fellow in Pathology and Bacteriology; Mr. Thomas J. LeBlanc, Fellow in Pathology and Bacteriology; Dr. Giovanni Martinaglia, Fellow in the Department of Animal Pathology; Mr. Henry S. Simms, Fellow in Chemistry.

Dr. Marshall A. Barber, hitherto an Associate in Pathology and Bacteriology, has accepted a position with the U. S. Public Health Service to do field work in the Malaria Research Laboratory, Memphis, Tennessee.

Miss Angelia M. Courtney, hitherto an Associate in Chemistry, has accepted an appointment to do chemical research work in the Medical School of the University of Toronto.

Dr. Carl Ten Broeck, hitherto an Associate in the Department of Animal Pathology, has accepted an appointment as Associate Professor of Bacteriology with the Peking Union Medical College.

Mr. Earl P. Clark, hitherto an Assistant in Chemistry, has accepted a position with the Bureau of Standards, Washington, D.C.

Dr. Ferdinand H. Haessler, hitherto an Assistant in Pathology and Bacteriology, has accepted an appointment as Resident Pathologist in the Department for Nervous and Mental Diseases in the Pennsylvania Hospital at Philadelphia.

Dr. Arthur B. Lyon, hitherto an Assistant in Medicine, has resigned to enter private practice.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending July 10, 1920, the number of deaths reported was 158 against 218 last year, with a rate of 10.19 against 14.28 last year. There were 28 deaths under one year of age against 37 last year.

The number of cases of principal reportable diseases were: Diphtheria, 41; scarlet fever, 18; measles, 70; whooping cough, 45; typhoid fever, 2; tuberculosis, 52.

Included in the above were the following cases of non-residents: Diphtheria, 4; scarlet fever, 4; measles, 1; whooping cough, 3; tuberculosis, 9.

Total deaths from these diseases were: Diphtheria, 4; scarlet fever, 1; measles, 1; whooping cough, 2; tuberculosis, 19.

Included in the above were the following non-residents: Diphtheria, 1; scarlet fever, 1; tuberculosis, 3.

The Boston Floating Hosptal.—The Floating Hospital of Boston opened its season of activities on June 29, with Dr. Henry I. Bowditch as physician in charge. On his consulting staff are the following physicians: Charles W. Townsend, Robert W. Hastings, Richard M. Smith, John Lovett Morse, George W. Gay, Fritz B. Talbot, William E. Fay, Arthur C. Jelly, Maynard Ladd, William T. Councilman, J. Herbert Young.

The visiting staff is composed of Doctors Elmer W. Barron, Eli Friedman, Paul W. Emerson, Edwin T. Wyman, Bessie T. Strongman, and an auxiliary staff of Dana W. Drury, otologist; James S. Stone, surgeon; William E. Ladd, assistant surgeon; Edwin H. Place, contagious diseases; George D. Cutler, assistant surgeon; William T. Councilman, pathologist; John Henry Bufford, dermatologist; Frederic W. Howe, director food laboratory; Walter C. Miner, stomatologist; Cleaveland Floyd, director bacteriological department.

The resident physician is Dr. Hyman Green, and others of the staff include: Chief of food laboratory, Miss Dora Sprague; director research laboratories, Alfred W. Bosworth; senior house officers, Basil B. Jones, M.D.; Paul C. Carson, M.D.; and Eugene C. Peck, M.D.; junior house officers, Harry S. Gross, M.D.; Robert C. Bates, M.D.; and Robert C. Stickney, M.D.; senior externe, Salem K. Siebler, M.D. The superintendent of nurses is Miss Evelyn Bradley.

During this season preventive work is to be emphasized, and this work will be increased by means of a nutritional clinic arranged for the benefit of children up to the age of eight years.

Departure of Boston Physician to Bermuda.—Dr. E. Eugene Walker, Assistant Resident Physician at the Massachusetts General Hospital, is returning to Bermuda to take up the practice of internal medicine. For the past seven years Dr. Walker has been associated with the Massachusetts General Hospital and the Massachusetts Charitable Eye and Ear Infirmary in an executive capacity.

Bequest to the Newton Hospital.—The will of the late Charles I. Travelli of Newport contains a bequest of twenty thousand dollars to the Newton Hospital.

Possible Freedom for Penikese Lepers.—It has been reported that Dr. Bernard F. Carey, State Deputy Health Commissioner, believes that two of the sixteen lepers under treatment at the state colony on Penikese Island have been cured by the use of chaulmoogra oil. In order to determine whether it will be safe to set them at liberty, plans have been made for an examination by a board of specialists. The two patients have received treatment for three years; all lesions have disappeared and repeated tests for the presence of the disease have met with negative reactions. Although other lepers have been discharged to go home to China or the Cape Verde Islands, and even to New York, this would be the first instance of a leper being set at liberty in Massachusetts.

The board of examiners will consist of Dr. Victor Heiser of New York City, who first introduced chaulmoogra oil into the country from India for the treatment of leprosy; Dr. Victor Safford of Boston, Dr. Algernon Coolidge of the Massachusetts General Hospital, D. Townsend Thorndike, and Dr. F. H. Parker.

Chaulmoogra oil is used internally in capsules, or, in case of stomach disturbances, by subcutaneous injections. Two other remedies in use in the Penikese leprosarium are sodium morrhua and sodium gycocardanate. The report that the Government has obtained title to Cedar Keys, three small islands off the west coast of Florida, for the establishment of a national leprosarium, is of interest to Massachusetts, as the completion of such an institution would probably relieve the State of the Penikese colony, which costs approximately two thousand dollars a year for each patient.

Massachusetts Commission for the Blind.—The Massachusetts Commission for the Blind recently submitted a most interesting report for the year ending November 30, 1919.

Since the cessation of the war there have been great changes in the methods of educating the bind. The whole policy is shaped today on the assumption that a person who suffers merely from lack of sight may be trained to work in straight competition with the sighted. If he is otherwise normal, his handicap of blindness may, by modern methods of instruction, be reduced to a minimum.

Shop committees have been organized to meet and deal with the complaints of blind workers and the innumerable complaints of previous years have been brought to the irreducible minimum.

An interesting innovation was made during the last year in the form of an appropriation of $10,000 for relief. This enabled the Commission to deal with a peculiarly difficult problem, the question of the blind mendicant. The Massachusetts Commission for the Blind offered assistance to all blind mendicants in the State on condition that they should come off the streets. Some responded, but others refused on the ground that they were getting a good living. So long as the public continues to support such people on charity and misplaced sympathy, it will be difficult for any commission to remove them from the street.

The report of the supervisor of work for children shows that that branch of the work is being given careful attention. As soon as each case is reported the home is visited in order to make sure that nothing has been neglected which might possibly give or restore any degree of eyesight, to learn the home environment and to give the parents consolation and advice in the training of these little ones. One cannot estimate the amount of harm to the blind child which may result from misdirected kindness in early life.

The blind citizen of Massachusetts does not rate himself as an object of charity. He is unwilling to think of himself as a mere burden upon the community. He realizes his handicap through loss of sight, but he is all the more intense in the use of his other senses, and all that he demands from the world is opportunity to make his way. This attitude on the part of the blind person ought not to be treated lightly. Whatever system is developed for his aid, it should take into account that desire for self-help. It should seek in its process to foster the blind person's willingness to help himself. It should, therefore, put opportunity in his way and guard him against the competition of seeing persons, where such competition would, because of his handicap, drive him beneath the line of self-support.

Massachusetts has already embarked upon a wise method of assisting its blind. It has offered commercial opportunity through the development of shops for the making of brooms, basketry, mops, rugs, and other articles. The results obtained fully justify the undertaking.

Week's Death Rate in Boston.—During the week ending July 17, 1920, the number of deaths reported was 162 against 200 last year, with a rate of 10.45 against 13.30 last year. There were 20 deaths under one year of age against 35 last year.

The number of cases of principal reportable diseases were: Diphtheria, 33; scarlet fever, 19; measles, 35; whooping cough, 52; typhoid fever, 2; tuberculosis, 39.

Included in the above were the following cases of non-residents: Diphtheria, 2; scarlet fever, 2; whooping cough, 4; typhoid fever, 1; tuberculosis, 12.

Total deaths from these diseases were: Diphtheria, 1; whooping cough, 2; tuberculosis, 6.

Included in the above were the following non-residents: Tuberculosis, 2.

NEW ENGLAND NOTES.

New England War Relief Funds.—The New England branches of the French Orphanage Fund and the Italian Fund have announced the following contributions:

French Orphanage Fund	$606,456.42
Italian Fund	330,385.42

The Massachusetts Medical Society.

AFTER DINNER SPEAKING AT THE ANNUAL DINNER OF THE MASSACHUSETTS MEDICAL SOCIETY, AMERICAN HOUSE, JUNE 9, 1920.

The President, Dr. Alfred Worcester, called the meeting to order. The Rev. Francis E. Webster of Waltham asked the blessing.

The President, **Dr. Alfred Worcester**: Fellows of the Massachusetts Medical Society: One cannot help wondering what the medical associations of our sister states are doing for speakers this week at their anniversary dinners. If the newspapers are to be believed, most of the states have let their favorite sons go off hunting in the Middle West (applause). We are more fortunate. Massachusetts' favorite son is waiting for Chicago to come to him (prolonged applause), and when the delegation of notification comes to Massachusetts, they will find our faithful Governor either working through the long day at his task of safeguarding the interests of the Commonwealth or, if they come in the evening, they will find him generously giving his encouragement and inspiration to such associations as ours (applause). I regret that the Governor has not yet applied for admission to the Massachusetts Medical Society. I am firmly convinced that he is fully qualified. He has proved his ability in his treatment of threatening disorders of the body politic. Those of us who come down to Boston only in this month of June cannot fail to have noticed the successful treatment which the Governor and his Police Commissioner have given the police force of Boston (applause). We who are struggling to reduce the extra avoirdupois of our patients, and incidentally our own, wish that we might learn from him what wonderful remedy has been applied to decrease the girth of the average policeman of Boston (applause and laughter). The elixir of youth seems also to have been bestowed upon them. By next year I doubt not our Governor will be found by our censors fully qualified to join the Society, and I ask you now to drink to the health and long life of Governor Calvin Coolidge. (Applause, rising.)

His Excellency, The Governor, **Calvin Coolidge**: Mr. President, Ladies and Gentlemen of the Massachusetts Medical Society: It is with very deep appreciation that I acknowledge the compliment that has been paid to me by your President in suggesting that I have some of the qualifications for membership in so learned and honorable a society as that of the Massachusetts Medical Society. Those of us who know it most respect it most, and if it is lacking anywhere for that reverence and respect that are its due, it is in places that are ignorant of the good work that it does and of the high-minded, self-sacrificing men and women that make up its membership. That was exemplified especially when the call came to you to take your part—your professional part—in the support, the defense and the maintenance of our American nation. For out of some 5,500 physicians of Massachusetts about 1,700, or nearly 30 per cent., joined under the national colors or those of our Allies in order that by their professional ability and skill they might do their part in sustaining the cause of civilization; and it was an honorable part that you bore, relieving insofar as it could be relieved by medical skill, the misery that follows in the trail of war, binding the wounds of those who had suffered in battle and cheering always with your confidence those who otherwise tended to become discouraged.

But I did not come here especially to speak of your experience and our experience in the great enterprise and sacrifice through which America and the world has passed. It is over now for the most part, and I think everyone realizes that we are at peace and are in the enjoyment of a peace that has come from the victory of righteousness—at least everybody outside of some circles in Washington knows that peace has arrived (laughter), and looking backward upon the experience through which our Nation and the other nations of the earth have just passed, and looking around upon conditions as they are at the present moment, I believe that our Nation has a good cause for a feeling of optimism and that there ought not to prevail the discontent of which we hear, and certainly there is no reason, as far as I can discover, for any general feeling of discouragement. I know that all human conditions are comparative. If there is any of you that does not believe that, see what happens in your family when some of the women in the neighborhood deck themselves out with new Easter headwear. And I say that there is a reason for optimism because of the comparative condition in which America finds herself now as to other nations that have recently been associated with us. Out of the over seven and a half millions of lives that were taken in the great war America happily was called upon to contribute as a result of loss in battle only about fifty thousand men. I know that that does not detract at all from the sorrow of those dear ones who have gone, but looked at as a whole, we have every reason to rejoice that we were spared the great sacrifice and loss of life that came to other nations that were in the great conflict. Economically, of course, we have been called upon to bear our share of the burdens, but that again is not one that weighs heavily upon the shoulders of the Nation. The expenses of the war are estimated at about 190 billions of dollars, but our expenditures are between 20 and 25 billions—a large sum, of course, but there again in comparison with the resources, and the strength, and the power of America, not one under which we need to feel that we are going to be burdened beyond our endurance to meet it, pay it and bear it. Economically, America at the present time is much better off than those European nations with whom we have been associated. If we can believe anything of the reports that come from there, there is a condition of idleness in many of them. There is a condition of heatlessness in most of them during cold weather due to a lack of the necessary fuel. They are capitalless so far as the necessary capital is required with which to meet their present conditions and in some of them—especially in Russia—they are in a condition of absolute and utter lawlessness. Now against that you know the conditions in America. We are able to find employment for all those who desire to work. We are fairly well able to take care of capital requirements and, although I don't know what is going to happen in New England during the next cold season, I have every reason to believe that we shall not suffer very much from lack of fuel to take care of us. And, of course, all throughout America with minor exceptions that do not need to be designated even, there is a condition of law-abiding peace on the part of her peoples, of industry fairly well carried on, and thrift that makes it look as though we were going into a condition of great prosperity.

I am not unaware that there is a certain discontent that pervades all sorts and conditions of society. There is a kind of discontent that ought to be encouraged because it is the foundation of all progress and all advance in human development. There are those that are not contented with the amount of education that they have, and they are therefore applying themselves in our schools and institutions of learning; and that is to the public advantage. There are those that are discontented with the general condition, think that they are not living the lives that they ought to live, and they are changing their methods of life, joining the church, perhaps, and determining to live better in the future; that is for the advantage of the public. There are those that think they are not accomplishing enough from their efforts and they are determining that they will work a little harder in the future and do a little more and produce a little more and be more industrious than they have been in the past; that is a discontent that is for the public welfare. These sources of discontent are discontent with ourselves, and wherever you find that as a condition you have the foundation laid for a betterment of mankind (applause). There is another kind of discontent that doesn't look so encouraging; it is the discontent of those who want to profit without any effort; it is the discontent of those who want to control without any ownership, and to rule without legal authority and responsibility, and in this Nation of ours which we boast is made up of kings, they want to rule without being subjects; these are the people that are discontented with others, and that kind of discontent isn't one on which you can base any progress or one on which we can expect the world to go forward.

I have sometimes wondered if people would examine the conditions that are around them, if they would finally realize that there was any reason for great discontent in America. What is there in our form of government or in our institutions that men really want to change that they have not the power to change if they so will? It is the boast of Americans that here the people rule and the will of the people is supreme, and if there is any general reason for making any change in our governmental affairs and in our institutions, there is at hand a method of securing it—orderly under the Constitution and according to the laws of the land (applause). I am aware as you are that our Government is not perfect. The plan of it is fairly perfect, but it is administered by human beings like you and me, and their administration partakes of human infirmities and that always has been so and always will be so; but that is no reason for undermining the foundation of our institutions or attempting to overthrow our Government. Our Government is the result of great sacrifice, of long and careful study and the experience and the intelligence of generations of men. It may be that they ought all to be cast aside; it may be that those who have had no experience with it, who have no background of comprehension of it, can come here from some foreign country and instruct us in the changes that ought to be wrought in it or in the suggestion that it ought to be done away with altogether, but scientifically looked at, I do not believe that thinking men and women would admit that such was probably the case, and I think there is a disposition on the part of everybody that thinks of these things, to support our Government and defend it, come against it what may. (Applause.)

It is natural for humankind to be discontented with their economic condition. It is especially natural that after a season of great prosperity there should be more discontent in that direction than ever before, because success along that avenue breeds in those who are the recipients of it a desire for greater and greater success, and you have no doubt noticed the phenomenon that as incomes have been increased during the past few years, as wages have risen and risen and risen, instead of bringing satisfaction and contentment to those who have received them they have had rather the opposite effect of producing a desire for greater and greater increases. That is a natural result, and those who know anything of history say it is exactly what would be likely to happen, but that is no reason for undertaking to overturn our economic system; it is no reason for saying that the relationship on which our economic system is founded ought to be done away with and some other system substituted for it, because there again, as in our Government, if you look at our economic system, you will see that no where and at no time has there been such prosperity—material prosperity—as there has been under the economic system that exists in America. Part of this discontent is the result of a class consciousness. We recognize no class in America. There are different conditions and different stations and different employments. Some are physicians, others may belong to the legal profession, others are engineers, some are manufacturers; but we recognize no condition into which men are born and to which they are tied throughout the length of their lives; and any attempt that is made to mark out and set off conditions is an entirely artificial and fictitious designation of the people of America, and any laws or any institutions or any practices that we undertake to found upon such a supposition—they do not work and in the end bring us disaster.

We hear continually discussion about labor and capital, about the employed and the employer, but if we look at the matter a little more deeply, we would see that we have no class of employed and no class of employers here in this land of ours. The fact is that we are all employed, all of us working for someone else in some way or other, and all of us are employees or employers directly or indirectly, for when the humblest workman purchases his supplies at the corner grocery store, he is employing the grocer to serve him, he is employing the transportation workmen of the Nation or he may be reaching into the Orient and there employing those who are producing the article that he is about to consume. This is artificial distinction. When we try to legislate artificially and fictitiously our results are not what we want to secure. It would be more to our advantage if we would consult always and at all times what is beneficial for the public and look at that alone rather than to try and see if we can't do something for an assumed class here and an assumed class there, because those activities are bound to fail, and in the public welfare we have to remember that the welfare of one is the welfare of all, the welfare of all is the welfare of each individual.

We gain our progress in civilization not altogether from an assumed equality but to a great extent from variety. I said a moment ago that you had your profession, and others have their professions. Civilization and learning and science are so broad now that no one undertakes to comprehend them all, and it is an age of specialists,—it is an age of division of labor, and it is only as we work along lines of that kind that we are able to make any progress; and that has laid upon us a new burden that did not exist in generations that have gone before when each individual was self-sustaining and could take care of himself, and if he didn't, it mattered very little to those who were about him. It matters a great deal now, and that has put a new duty upon citizenship and one that must be realized and met and fulfilled, and we have not the privilege that we had then to refrain from carrying that occupation into which we have cast our lives. What do you think would happen if an organization like your Society should say, "We will do no more work until something has been done in government or economic relations that is to our satisfaction"? You see what happens now when those who have cast their lot in transportation say, "We will refrain from doing the work that we are engaged to do." You can imagine what would happen if those who are engaged in agriculture should say, "There, we will stop our production until we have accomplished something by an exertion of a pressure of that kind, that we desire to accomplish either in a governmental way or in an economic way." That is not government—that is what they refer to as mass action. And unless we can carry on our affairs orderly, peacefully, according to the laws of the land and under the Constitution, and each bearing the burden that the duty he has assumed puts on him to bear, we can't sustain the kind of a civilization that we have chosen to make our own, it will break down and we shall find ourselves in a condition of anarchy on the one hand or despotism on the other.

So it is of the utmost importance, living under the conditions of modern civilization that each and every one of the parts coöperate with each and every other part. (Applause.) Economically, of course, that is the best form of civilization that produces most because it is production that sustains us all, and it is production and the increase and the supply of capital that sustains our civilization, and there again haven't we a right to ask those who are criticizing us, whether they can show anywhere else on earth a condition of production and a condition of civilization and a general benefit to all the public that equals what we have here in America? (Applause.) And unless they can show it, haven't we a right to reply to them that the changes and the reforms if they so desire to designate them, which they propose, are not anything that we desire to put into operation? I think that we want to support our Government. I think that Americans are determined to support that economic relationship under which they have prospered for now nearly 300 years. I know that, although we are often charged with it, Americans think of something more than a material prosperity, they want that and they ought to want it because on it rests our civilization, but they use it ultimately not as an end in itself, but as a means, as a ministration to a higher form of civilization. What is it that gathers societies like yours? What is it that founds hospitals to minister to the suffering? What is it that establishes libraries, great institutions of learning, and builds places of religious worship? It is the result of the material prosperity that we see all around us, which is used not as an end in itself but as a means to administer to all that is highest and noblest in mankind.

Seeing the condition of America, the soundness I believe of its Government, the prosperity of its economic relations—better than they are in any other country—on earth—it seems to me that the message I ought to bring to you is one of hope, optimism and expectation, and coupled with that goes also the message of duty.

As we have our prosperity and our success, it is our duty to use them for the assistance of the people of our own country and for the alleviation of the suffering of other countries, and with all this before us, I firmly believe that the earth is coming into a new season and that America is to have the opportunity to lead it on, not for what we can get out of it, but for the service that we can render first to Americans and then to the other peoples of the earth. (Prolonged applause.)

The President, Dr. Alfred Worcester: Twenty-five years ago when I had the honor of delivering the annual discourse, I was under instructions given me by dear old Doctor Cotting, who fifty years before had been the orator of the day and afterwards president of the Society. He told me that whatever I said in the annual discourse, let it begin with glory to the Massachusetts Medical Society, let that be the middle theme and let that be the ending. Now you have had an orator today to whom I did not dare give any advice, but I told him that it would not be enough for him to deliver that discourse, he must come to our dinner and stand here ready for the testimony of our admiration for his gallantry, for his skill, for his devotion, and of our love for him as a man—Dr. Hugh Cabot. (Applause.)

Dr. Hugh Cabot: Mr. President and Members of the Massachusetts Medical Society: As you see, the prodigal always returns and as you have seen, the fatted calf has been duly prepared. I might have known that Dr. Worcester would have attended to the calf.

In continuation of the line of thought which I was following this morning in regard to the relation of the practice of medicine to the community, I want to point out to you my reasons for believing that this adjustment should be made differently in different sections of the country. It is of course trite to say that conditions differ in different sections of the country, but there are certain fundamental differences which are bound to influence development and for this reason we shall be well advised not to try to put into practice in one part of the country a method which has proved satisfactory in another without taking this factor of different environment into account. One of the fundamental things which is going to influence the relation of medicine and the community is the varying types of institutions of education and institutions of learning—they are not the same thing—which exist in various parts of the country. I have been much impressed in the past year with the very different relation of a state university to the problem of education from that borne by the endowed university. The state universities tend, under the pressure of those who have created them, that is to say, the Legislatures, to become more and more technical schools or groups of technical schools. They are likely to become chiefly concerned with the business of turning out people who can earn their living and they tend to become deified trade schools. On the other hand, endowed universities are much more likely to be able to concern themselves with those rather elusive things which one terms culture. No comparison need be drawn between these two different kinds of educational institutions, but it is none the less certain that they are bound to influence the conditions which exist about them. The relation of the state university to the state is a very intimate one, whereas it is likely, as we all know, that the endowed university will bear a very loose if any relation to the state. It therefore follows that in the state university there exists a piece of machinery which can be made to do certain work which is quite impossible in states where no such institution exists. Now though you may believe, as I believe, that the endowed university with its ideals of culture has a more inspiring effect upon mankind, it is nevertheless true that in the building up of a medical school which shall affect the relation of medicine to the state, the state university is a very valuable engine. Such a medical school is in a position to affect public opinion and get results more promptly than can be done by an endowed university.

I am strongly of the opinion that the state universities are likely to try experiments in state medicine, if you use the phrase not too strictly, which will be very interesting. The growth in number and strength of the state universities throughout the country has been very rapid and more and more of them now have a medical department and associated with it a university hospital, which become an important source of experimentation in community medicine. For many years there has been in Michigan a law which has been copied by several other states, authorizing the sending to the University Hospital any child born in the State with a deformity which can be remedied by medical care. These children may remain at the hospital as a charge upon the State until their condition has been improved as far as possible. The hospital is authorized to draw upon the State for the expenses incident to the care of these children. The law also authorizes the sending to these hospitals by recognized authority, which consists of judges, town officials and registered physicians, of great numbers of other patients who need care which they cannot afford and which the community ought to supply. The expenses for these patients are chargeable directly to the town or county and in this way the hospitals can be maintained on a satisfactory basis and become engines for great benefit and they make for close relations with the community.

But there is another aspect of this relation which is also important. More and more the State, through its officials, is coming to regard these university hospitals as disinterested sources of professional opinion and in this way may well become the sources from which physicians may be drawn for the care and management of medical institutions on a community basis. The University of Michigan is now preparing to try an experiment based on its relation to the State which appears to me interesting. There are many towns without a physician, a condition which I believe exists in most states. There is at present no machinery by which these towns can be supplied, and during the past year the president of the University of Michigan has been in receipt of many letters from town officials asking assistance in this problem. We are now engaged in working out a plan by which the University through its hospital shall give assistance in this dilemma. It is planned to attach to the University Hospital an additional number of young physicians who as part of their medical training may be sent out into the country to help in this problem. When a town reports that it is without a physician, if such report upon investigation proves to be true and the Medical Society is unable to help in the matter, it is planned to send out one of these physicians and equip him with one or more nurses and a small laboratory. The salary of this physician, who will remain a member of the University Hospital staff, is to be paid by the University which in turn collects from the town. It has been suggested that we should allow these physicians to practice medicine in the ordinary way and to collect their fees which would, however, be turned over to the University to reimburse it for its expenditure, the town finally having to foot only the balance of the bill. It is expected that these physicians would only remain for short periods, precisely as they move from one part of the Hospital service to another under present conditions. During that period of country service they would have the support, both physical and moral, of the University staff and arrangements would be made with nearby cities and towns for proper consultation.

This sort of experiment to which I have referred is most readily carried out through the medium of the state university. But it does not appear to me to follow that it can be done only in this way. Clearly the problem of maintaining the proper adjustment between the medical practitioner and the population is one of first class importance and equally clearly it is not a matter which will look after itself. At the moment, physicians, like the rest of the population, are seeking large centers to the disadvantage of the rural districts. The situation is probably temporary, but its duration cannot be predicted or even guessed at. It appears to me to be a matter of vital concern to the state medical societies, that the distribution should be maintained in a reasonably normal way. It is not impossible that the state medical society might take up this problem and deal with it through its influence on existing medical institutions. It appears to me not chimerical to hope that a medical society could arrange with the great metropolitan hospitals to deal with this question as we are trying to deal with it in Michigan. Obviously, the machinery must be different and probably the task will be difficult.

I throw this out simply as a suggestion but am clearly of the opinion that if it can be done by a state society, it will be done by the Massachusetts Medical Society.

Obituary.

MAJOR GENERAL WILLIAM C. GORGAS.

Major General William C. Gorgas, former surgeon general of the United States Army, died at Queen Alexandra Hospital in London on July 4, 1920. The immediate cause of his death was apoplexy, the ultimate cause, Bright's disease. General Gorgas was born in Mobile, Alabama, on October 3, 1854, the son of General Josiah Gorgas. He was graduated from the University of the South at Sewanee, Tennessee, in 1875, and from the Bellevue Hospital Medical College in 1879, when he joined the house staff of the Bellevue Hospital.

General Gorgas was considered one of the world's foremost authorities on military medicine and surgery. In the past ten years his services were sought to fight plagues in many parts of the world. When the typhus epidemic began in Serbia during the war, an effort was made to have him undertake the campaign against it, but at that time he was needed to direct the medical and surgical work for the American Army in France.

He fought and defeated the malarial mosquito in Panama, and thus made possible the building of that great waterway. He dislodged yellow fever from its century-old stronghold in Havana, and under the direction of the United States Government and the Rockefeller Foundation supervised campaigns against that disease in Central America, Peru and Ecuador. On the invitation of the British Government he went to South Africa in 1913 to establish sanitary conditions in the Rand, as a result of which he received high honors from the medical profession in London, and Oxford University conferred a degree upon him.

In 1914 General Gorgas became surgeon general of the United States Army. He reached the age limit while still on duty in France, in 1918, and retired from active service at the termination of the war. In 1919, he directed a yellow fever commission organized by the Rockefeller Foundation, and made an extensive tour of Central and South America to direct the work of eradicating yellow fever from some of its breeding centers.

General Gorgas was an associate fellow of the College of Physicians and Surgeons, Philadelphia, and a member of a number of scientific organizations. In 1908 the honorary degree of doctor of science was conferred upon him. He was decorated by the French Government and made a commander of the Legion of Honor, and was knighted by King George of England. British military funeral services were held for General Gorgas at St. Paul's Cathedral, London, on July 9.

General Gorgas is survived by his wife, whom he married on September 15, 1885, and who was Marie Cook Coughty of Cincinnati, Ohio.

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Correspondence.

BISMARCK, PIROGOFF, AND THE GERMAN EMPIRE, OR HOW THE MAP OF EUROPE MIGHT HAVE BEEN CHANGED THROUGH THE APPLICATION OF A SPANISH FLY BLISTER.

Prout's Neck, Maine, June 28, 1920.

Mr. Editor:—

The following account of Bismarck's experience of medical attention in Russia is taken from "Bismarck the Man and Statesman," an autobiography.

In June, 1859, after Bismarck had been riding at the riding school in St. Petersburg, he returned home without his customary furs, after having stopped on the way to watch the drilling of some soldiers. The next day he was attacked by general rheumatic pains which subsided except for trouble in the left leg where he had received a previous injury.

Dr. Walz, who had been recommended by the former Grand Duchess of Baden, offered to prescribe for the ailment, which was not severe, and Bismarck hesitated to submit to any treatment. On being told that the remedy was a simple one, a blister over the popliteal space, he reluctantly consented to have it applied.

In four hours' time a large, deep burn of the knee resulted, and Bismarck found it impossible to remove all of the blister himself. He sent for Walz, who assured him that he could quickly remove what remained of the blister, which was stronger than was intended. The idea was given that this was the fault of the chemist.

Meanwhile the corrosive action kept up and intolerable pain set in. Bismarck made some inquiries and found that the chemist had put up the blister according to prescription, which contained a larger amount of cantharides than was usual. Walz, he ascertained was the son of the court confectioner at Heidelberg, and had failed in his medical examinations.

The action of the blister finally destroyed a large vein at the back of the knee, and Bismarck was on his way to Stettin by sea for medical consultation, when he found that the celebrated Russian surgeon, Pirogoff, was on the same vessel. After examination, Pirogoff advised amputation of the leg, and when Bismarck asked where the leg was to be taken off, Pirogoff pointed to a place far above the knee. Bismarck declined this amputation and sought further medical advice. After trying many kinds of treatment in vain, the leg was finally healed by recourse to the Baths at Nauheim.

On the way back to St. Petersburg in November, when Bismarck was visiting von Bülow at Hohendorf, a clot of blood, which had formed in the injured vein of the leg, became detached and was carried to the lungs and an acute inflammation was set up.

Physicians thought the outcome would be fatal, but after a month of critical illness health was partially restored. Bismarck speaks as follows concerning this illness:

" . . . satisfied on this point, I anticipated my end with that calmness which is induced by unendurable pain. At the beginning of March, 1860, I was well enough to be able to travel to Berlin where I awaited the completion of my cure."

This was some nine months from the time of the application of the blister. These events occurred eleven years before the occurrences which lead up to the alteration of the famous Ems telegram by Bismarck.

Had Bismarck died from the effects of the application of the blister, as he so nearly did, who knows but that the fate of Europe might have been changed.

Yours truly,

William Pearce Coues, M.D.

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RECENT DEATHS.

Dr. William P. Hurley of South Boston died recently at the City Hospital after a short illness. Dr. Hurley was 33 years of age and a graduate of Tufts Dental School. He is survived by three brothers.

Dr. Thomas Jefferson Buchanan died on July 15, at Tom's River, New Jersey, as a result of x-ray burns suffered fifteen years ago while experimenting on malignant growths. Dr Buchanan was 61 years old. He was a graduate of Jefferson College and devoted a great part of his life to work in Jefferson Hospital and at the Jefferson Medical College. He is said to have been the first physician at Jefferson Hospital to experiment with the x-ray. Dr. Buchanan served at the Tom's River Hospital for about five years. During the war he served as medical inspector of the United States Coast Guards in New Jersey and as a chief medical examiner. Dr. Buchanan was the author of a number of monographs on medical and surgical subjects, among which are "X-Ray Experiments," and "Experiments with the Dr. Behrs Treatment." He was one of the first physicians in the United States to use the Dr. Behrs treatment in the cure of cancer.

The Boston Medical and Surgical Journal

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The Massachusetts Medical Society.

MEETING OF THE SECTION OF MEDICINE, JUNE 8, 1920.

THE DIAGNOSIS AND TREATMENT OF THE HEMORRHAGIC DISEASES.

BY RALPH C. LARRABEE, M.D., BOSTON.

THE object of this brief paper is to state the clinical facts concerning the principal diseases characterized by tendency to bleed, in the simplest possible terms, and, by eliminating unessential technicalities of nomenclature and method, to aid the practitioner in recognizing and managing them.

The normal processes of hemostasis by which bleeding from small wounds is spontaneously stopped comprise several factors. First, when a small vessel is cut or torn, the injured ends contract and crinkle. Second, the blood in the injured end clots. Inasmuch, however, as clotting requires several minutes, it is difficult to conceive how it alone could bring to a standstill the most sluggishly flowing stream even from the smallest vessels. The outflow of blood must first be stopped by other mechanisms. Thirdly, the blood platelets are an essential element in hemostasis. Normally separated from one another in the flowing blood-stream, they adhere to any foreign body or injured spot in the vessel-wall and form sticky masses which effectually plug the ends of torn capillaries.

A study of the coagulation factors in their entirety involves technical difficulties so great as to be out of the question in the ordinary clinical investigation of the every-day case. There are, however, two simple bedside tests that can be performed by anyone,—the estimation of bleeding-time and of coagulation-time.

Bleeding time is tested by making a small incision in the lobe of the ear—about such a wound as would be made for a cell count, using the point of a scalpel—not a needle. The blood is removed every thirty seconds by touching the puncture gently with a piece of blotting paper or filter paper. Normally, bleeding ceases in from one to three minutes, depending somewhat on the depth of the puncture and the state of congestion of the capillaries. Anything over eight minutes is distinctly abnormal.

Prolongation of the bleeding time usually means deficiency in the number of blood platelets, and when it is present one can usually infer that the bleeding is due, at least in part, to this deficiency. It also occurs in cirrhosis and other liver diseases where fibrinogen is deficient. Before assuming that prolonged bleeding time is due to lack of platelets one should, therefore, inspect a stained smear.

Coagulation time has been tested in many complicated ways. Those which use capillary blood from skin punctures are objectionable because, in passing through the injured tissues, the blood picks up substances which may shorten the time materially. The best way to test clotting time is to take some blood and see how long it takes to clot. About two cubic centimeters of blood are taken from a vein in the usual manner and put into a test tube having a diameter of about one centimeter, both the syringe and the tube having been rinsed out with normal salt solution. The tube is allowed to stand upright. Every minute it is turned slightly sidewise. When it can be inverted without spilling, clotting is considered to be complete. The normal time is four to eight minutes. Anything over twelve minutes is decidedly abnormal.

Prolonged coagulation time signifies deficiency of one or more of the several chemical substances concerned in the complicated process of fibrin or clot formation.

If the tube containing the coagulated blood is allowed to stand for a few hours the clot normally retracts. Failure to retract is evidence of marked decrease of platelets. The serum may then be used for the Wassermann reaction or for other studies.

Further examination of the blood is necessary to determine the type and degree of anemia. This includes the usual corpuscle counts and the staining of a smear by the Wright or some similar method. A platelet count is not necessary as an inspection of a smear gives sufficiently accurate evidence.

It is impossible, considering the limitations of this paper, to speak exhaustively of the individual diseases characterized by an abnormal tendency to bleed. The following brief statement must suffice:

In the aplastic group of diseases the chief, and in some conditions the only factor involved, is the platelets. Their normal number is about 300,000 per cubic millimeter. When they are decreased to about a fifth or less of this number the tendency to bleed becomes manifest.

In purpura hemorrhagica the only lesion is decrease of platelets. Bleeding time is prolonged. Coagulation time is normal. If anemia is present, it is the result of hemorrhage and is of the benign or secondary type. There is no decrease of leucocytes. The decrease of platelets is quite obvious in the smear.

Aplastic anemia is probably closely related to hemorrhagic purpura. In the latter disease the bone marrow fails to produce the normal number of platelets. In aplastic anemia the functional deficiency of the marrow goes further and involves not only (1) its platelet function, but also (2) its property of producing certain leucocytes, notably neutrophiles, and (3) the red corpuscles as well. Hence the blood will show abnormally low white and red counts, with peculiarities which make the picture quite definite, and distinctly different from that of the ordinary post-hemorrhagic anemia. The anemia is rapidly developed and soon becomes extreme. It usually precedes the hemorrhages and is commonly greater in degree than the bleeding would lead one to expect.

The bleeding is due in part to numerical deficiency of platelets, but one of the chemical substances concerned in clotting, a substance derived chiefly from the platelets themselves, is also deficient. Hence, in addition to prolonged bleeding time, there is also prolonged coagulation time, though the latter may not be extreme.

In leukemia there is usually a tendency to bleed. This is due to a sort of aplasia of the marrow,—the normal elements being replaced by the excessive overgrowth of the leukemic tissue. In the lymphatic type there is almost always marked decrease of platelets with consequent increased bleeding time and non-retractile clot. Frequently there are other disturbances of the coagulation elements, so that the condition is somewhat complicated. As the disease is, except in its aleukemic phase, easily recognized from the blood picture, these factors are not important from a diagnostic standpoint. The important thing to remember is that leukemia is usually accompanied by marked hemorrhagic tendencies, that these tendencies are almost impossible to control, and that operations are hence to be avoided unless coagulation tests are normal.

Pernicious anemia may also be mentioned here, since some cases show this same tendency to bleed abnormally. Platelets are usually decreased, but diagnosis does not depend on studies of coagulation. Transfusion seems to control the bleeding and operations are not particularly dangerous.

It will be seen that decrease of platelets occurs in a number of different conditions. The matter is further complicated by the occurrence of ill-defined and intermediate states. It is interesting also to note that many febrile diseases, such as influenza and typhoid,—diseases in which hemorrhages may occur,—frequently show decrease of platelets, leucopenia and other evidences of marrow deficiency. They cannot, however, be considered in detail here.

In sharp contrast to these diseases, showing numerical deficiency of platelets as an important factor, is hemophilia. Here there is first the characteristic heredity, the disease appearing only in the males and being transmitted only by the females. Hemorrhages are less apt to be spontaneous or to consist of petechial eruptions and oozing from capillaries. The injury is more apt to be one which would normally cause some bleeding, only here a hemorrhage which would normally cease spontaneously in a few minutes continues and a trivial wound becomes serious. The disease is due to a deficiency of prothrombin, one of the chemical elements concerned in coagulation. Bleeding time is normal; platelets are normal in number, though not in quality; and the clot, once formed, retracts normally. Coagulation time is prolonged, sometimes over an hour. Blood counts and smears are normal, unless anemia has resulted from loss of blood, in which case the same picture is presented as in any post-hemorrhagic anemia.

Hemorrhagic disease in the new-born is similar to hemophilia in that it is due to deficiency of the same element—prothrombin. As in hemophilia, bleeding time and clot retraction are normal, but coagulation time is notably prolonged. The peculiar heredity of hemophilia is, however, lacking and the condition is a temporary one, existing only for the first few days of life. Only rarely does true, inherited hemophilia of the permanent type manifest itself at this age, and most babies who survive for a few days remain free from hemorrhagic tendencies thereafter.

Here again the picture is complicated by the occurrence of certain anomalous cases, and particularly by the existence of congenital purpuras and hemorrhagic infections. As in all diseases of the hemorrhagic group, it is often easier to classify a given case after thorough study of coagulation factors than it is to give it a name.

There are several diseases or groups of diseases of the liver and bile passages in which hemorrhages are prone to occur. The most significant, from its frequency and surgical importance, is chronic obstructive jaundice. After this condition has existed for some weeks, operations are apt to be attended with serious hemorrhage, and it is important to be able to pick out the cases where undue bleeding is liable to occur. The condition is due to deficiency of available calcium in the blood. The danger can be recognized by testing the coagulation time. If the latter is normal, operation is probably safe so far as undue hemorrhage is concerned. If coagulation time is greatly prolonged, operations should be avoided, or postponed until it is normal.

Cirrhosis of the liver may show a tendency to bleed. The bleeding time is prolonged, but platelets are normal. Coagulation time is normal but the clot is flabby and poor in quality. These conditions are due to deficiency of fibrinogen. Operations should be avoided in this disease as long as the bleeding time is prolonged.

The conditions described by no means complete the list of diseases associated with hemorrhagic tendencies. In some of them, like scurvy and simple purpura, the coagulation factors appear to be normal. Abnormal bleeding may probably result from weakness of the blood vessels, from emboli and from entirely unknown causes. I have confined myself to the group of diseases whose nature is more definitely known, and especially to those which I have myself observed,—in the belief that such diseases will also constitute the bulk of those occurring in the practice of others.

The treatment of these diseases is today such that the term "uncontrollable hemorrhage" is no longer appropriately used, except perhaps in leukemia. It should be said, however, of the whole group of hemorrhagic diseases, that, while appropriate treatment will almost invariably stop the bleeding, the control is only temporary. Except where the causative disease is itself temporary, the tendency to bleed will sooner or later recur.

Local applications are not very satisfactory. The older astringents and styptics such as ferric chloride, alum and the like do little but make an impressively nasty mess. Epinephrin solutions will often control slight bleeding from the mucous membranes, but their action is quite fleeting. Indeed, local applications have but a slight value in these diseases.

Cephaline and other tissue extracts such as coagulene, coagulose, etc., are of somewhat greater value locally, both in platelet cases and in hemophilia. In spite of its marked effect in test-tube experiments, it appears to be quite ineffectual when used intramuscularly or intravenously. The possibility of producing emboli would seem to make its intravenous use inadvisable.

Calcium salts are of value only where the hemorrhagic tendency is the result of calcium deficiency. Such is the case in chronic obstructive jaundice, and, practically, only in this condition. In such cases, where operation is contemplated and coagulation time is materially prolonged, calcium lactate should be given by mouth in large doses, as high as 100 grains daily, for several days previous to operation. Operation should be deferred until coagulation time is normal.

Animal serum contains, when fresh, prothrombin, the coagulation element which is deficient in hemophilia and hemorrhagic disease of the newborn. It does not contain platelets and hence can be of no value in hemorrhagic purpura and other diseases where the bleeding is due to platelet deficiency. Its prothrombin disappears in a few hours. Old serum is worse than useless. The value of diphtheria antitoxin rests wholly on empirical grounds. Theoretically and experimentally serum is of little value.

The intravenous administration of whole blood comes nearer to being a universal panacea in this group of diseases than any other procedure. It is the method of preference except in chronic obstructive jaundice, where calcium is better. Not only does it supply all the elements of coagulation, but it also supplies red corpuscles, and hence benefits the anemia. Either the citrate or the paraffined tube method may be used. My own preference is for the latter. The citrate method causes more reactions and introduces fewer platelets. It should be stated that the benefit to be derived from transfusion in platelet deficiency is but brief, for the life of a platelet is not over four or five days. But transfusion is temporarily an efficient means of controlling the bleeding.

If facilities for intravenous transfusion are lacking, rapid intramuscular injection of small amounts of whole human blood may be used, preferably in the tissues near the bleeding area. The technique is quite simple. Especially good results have been reported in purpura hemorrhagica.

In conclusion it should be said that while the individual diseases comprising this group are not very common, taken as a whole they are frequent enough and serious enough to deserve attention. The hemorrhages are often sudden and urgent. If they are to be successfully handled, the causative disease must be determined in each case and appropriate treatment must be promptly undertaken.

DISCUSSION.

Dr. Thomas E. Buckman, Boston: It would be difficult to add anything to the text of Doctor Larrabee's paper, but I should like to say a word or two in regard to the explanation of some of the phenomena which he has mentioned. It seems strange that the bleeding time in hemophilia is essentially normal and yet so much prolonged in purpura hemorrhagica. I think we may explain this by considering the fact that in purpura hemorrhagica there is a universal thrombopenia; that is, the thromboplastic substance derived from the platelets is not only diminished in the blood itself but also in the fluids of the body and this because there is such a paucity of platelets. Consequently, when the ear is pricked and the blood begins to drop away, it does clot, to be sure, but poorly, and the clot is readily wiped away. On the other hand, in hemophilia, we are dealing with an inhibition of reaction; that is to say, the speed with which the platelets appear to go into solution is very much retarded, so that ultimately we will get a clot from hemophilic blood and it will be as tough as a clot from normal blood. Nevertheless, reaction is so slow that when blood is taken from a vein in hemophilia, if no injury to the platelets occurs, then the coagulation time is prolonged. However, platelets are being constantly destroyed in the body and the products that effect coagulation are being dissolved in the tissue juices, so that when one pricks the ear, the blood becomes mixed with the products of the platelets to such an extent that coagulation occurs, and the bleeding time is not prolonged.

I think it is very important to observe more than merely the coagulation time and also to take care to perform the tests with accuracy. Shaking, air bubbles, dust, admixture of tissue juices, all of course interfere with the coagulation, accelerating it if anything. Consequently, the tube in which one is determining the coagulation time should be handled as little as possible, and it is desirable to have three tubes of uniform diameter, the first two of which may be tilted to obtain an approximate idea of the coagulation time, and the third tube tilted only once, at the end point. Of course, the extent of the surface of blood which is exposed to the vessel determines also to some extent the coagulation time, so that it is important to use constantly tubes of the same diameter. We use tubes of the size recommended by Lee and Minot, and these tubes are eight millimeters in diameter. After the blood has clotted, further observations of the clot are very important. The clot should be incubated (it may be carried in one's vest pocket) for three hours and then observed. The normal clot retracts to a tough mass. In purpuras and other conditions where there is a paucity of platelets, the retraction is very poor and the clot itself may become digested. Apparently, it takes a certain number of platelets to institute clotting. The number present in excess of that minimum amount is utilized in retraction of the clot, so that observation of the quality of the clot gives one additional information as to the number of platelets present. In cases where the bleeding and coagulation times are normal, a well retracted clot is an indication that there are enough platelets to prevent spontaneous hemorrhage. It is very unfortunate that the counting of platelets is beset with so many difficulties that there is really no accurate method of determining the number of platelets However, it is possible by use of stained smears, as Dr. Larrabee has mentioned, to obtain a sufficiently accurate estimate of the number of platelets for ordinary diagnostic purposes.

In this connection I think it is important to obtain perfectly clean smears. If coagulation is begun before the smear is made, then, as pointed out by Lee, the platelets undergo certain changes tending to become fused in masses, so that in some parts of the field one will observe clumps of platelets and in other parts there will appear to be a paucity of platelets. Hence, unless the plates are evenly distributed, inspection of the smear does not give reliable results. Moreover, unless the smear is stained well, the platelets are apt not to stain and one is confused by objects which cannot be differentiated from artefacts. We have found it very convenient to use crystal violet for the staining of platelets. A drop of one per cent. aqueous solution of this dye is placed on a slide and allowed to dry. A drop of blood on a cover slip is then placed over that. Platelets are stained beautifully by this dye. As has been known for a long time, brilliant cresyl blue is a splendid stain for platelets, and, as shown by Hawes and recently further developed by Cunningham, it is possible to superimpose on these stains Wright's stain, and obtain beautiful preparations which show not only platelets but reticulated red cells and leucocytes. Such preparations will keep over a period of months. This procedure is so easy to carry out that I think it is worth doing as a routine in every case where an examination of the blood is to be made.

The Use of Quartz Light in Dermatology.

By E. Lawrence Oliver, M.D., Boston.

Before speaking of the use of quartz light it seems best to explain in brief what this light is.

Sunlight passing through a prism is split into many rays, differing in color, wave length and in qualities, the visible rays forming the colors of the rainbow. Of these visible rays, the red have the longest wave length,—about one-half inch; the violet the shortest,—about one-quarter inch. Now, in addition to these visible rays there are at either end of the color spectrum enormous numbers of rays which are entirely invisible; those to the right of the red are known as infra red rays, while those to the left of the violet are called the ultra violet. Among the infra red rays are the Hertzian waves up to one thousand feet in length; it is these waves of light that are used in wireless telegraphy. To the left of the violet rays among the the ultra violet rays are the x-rays and the gamma rays of radium, the wave length of the latter being measured in quintillionths of an inch, a length totally inconceivable to the human mind.

Now when we consider that the rays of visible light vary in wave length only from about one-quarter to one-half an inch, while the shortest invisible rays have a wave length of a few quintillionths of an inch and the longest have wave lengths up to or beyond a thousand feet we begin to realize what an infinitesimal proportion of light is visible to us.

Physicists tell us that all these waves of light are electro magnetic vibrations, the colors and other properties of light depending entirely on the wave lengths of these vibrations.

As the red and infra red rays are hot, while the violet and ultra violet are cold, one might naturally infer that the red and infra red rays were the cause of sunburn, but strange as it may seem the opposite is the truth; it is the cold ultra violet light that causes sunburn. Proof of this lies in the fact that if we filter out the heat rays a sunburn can be produced, but if we filter out the cold rays leaving only the hot red and infra red rays of the sun, no sunburn occurs. A continuous flow of ice water can be maintained through the Kromayer lamp, so that when it is pressed against the skin it feels and is ice cold and yet a blistering "sunburn" may be produced with this lamp under these conditions by an exposure of thirty seconds.

Although a generation has passed since Finsen, pioneer in light therapy, demonstrated the therapeutic possibilities of actinic light, a wide use of his inventions has been out of the question, on account of the expense and complications of his apparatus. The minds of many, therefore turned toward the invention of simpler apparatus for the production of ultra violet light to take the place of Finsen light, in part at least, and to act as more or less efficient substitutes for natural sunlight. The iron arc light and the Uviol lamp were among the inventions in this field, that attained a certain measure of justified success.

In 1892 Arons discovered that an electric current passed through a vacuum tube containing a small amount of metallic mercury, produced a peculiar bluish light which contained no red or orange rays. Not long after Cooper Hewitt, an American engineer, patented a lamp, based on Arons' discovery and the Cooper Hewitt lamp has now proved of commercial value in lighting on account of its small consumption of electric current. Although this light is rich in ultra violet rays, these are almost entirely filtered out by the glass of the vacuum tube, but when Heraens succeeded in melting quartz crystals and in making the vacuum tubes of this material the start was made toward a simple, efficient and comparatively inexpensive source of utilizable ultra violet light, for the ultra violet rays readily pass through quartz.

Kromayer's improvements followed, and in 1913 the so-called Alpine sun lamp was designed by Bach, Brieger, Nagelschmidt and Hageman. The principle of the two lamps is the same, the light being obtained by passing an electric current through mercury vapor contained in a vacuum tube made of quartz. The Kromayer lamp is a small water cooled lamp, the Alpine sun lamp is air cooled and has a wider field of usefulness on account of the facility with which large areas may be treated by a single exposure.

Many students of natural heliotherapy, among them Rollier, perhaps the foremost in this field, believe that the beneficial results from general exposures to sunlight are in a large measure due to the tanning of the skin. If this be true, quartz light must be of considerable value as a substitute for natural sunlight for the tan produced by this light is in all respects identical with the tan caused by natural sunlight.

Freiberg of Cincinnati, in an article published in 1917,[1] came to the conclusion that the light from the Alpine sun lamp could not be considered even a fair substitute for natural sunlight. In his article he makes special reference to two cases of bone tuberculosis, both of which had shown marked improvement after general exposures to sunlight during the summer. Both cases became worse soon after the Alpine sun lamp was substituted for sunlight. Among other observations he also noted that the tan acquired by exposures to sunlight, began to fade and continued to fade during the period of quartz light exposures.

Now it has been abundantly proved that any amount of tan produced by sunlight can be not only retained but increased if desired by exposures to quartz light; it is purely a question of dosage. The fact that the tan faded in these cases is in itself proof that the exposures were too short. If the improvement during the period of natural heliotherapy was due in a large measure to the tan, and this is the inference one might draw from the article, it is reasonable to suppose that with larger doses of quartz light the tan would have been retained and the improvement would have continued. If one prescribed a half drop of tincture of digitalis three times a day for a patient suffering from dropsy of cardiac origin it would be hardly reasonable, if no benefit ensued, to conclude that digitalis was a drug of little or no value.

But whatever may be the comparative value of quartz light in the treatment of bone tuberculosis, in dermatological therapeutics this light is often vastly superior to natural sunlight. For example, in a recent case of chronic eczema of the palms, with marked thickening of the horny layer and great itching, the itching was relieved and definite visible improvement occurred within a week after a single exposure of ten minutes at a distance of eight inches from the source of light. I feel absolutely confident that natural sunlight would have had little or no effect in such a condition. Two subsequent similar cases tend to show that the improvement in the first case was not a coincidence.

Let us now consider some of the skin diseases in which this light is often of value.

Ulcers of Various Sorts. Most of these cases that I have treated with quartz light, about twenty-five in all, have been ulcers of the leg, of the varicose variety. Two of these cases had shown little or no improvement after a month's rest in bed combined with good local treatment of the usual sort. The ulcers in both of these cases began to heal rapidly soon after weekly quartz light treatments were instituted, complete healing taking place in less than two months in both instances and this with the patients "on their feet." The other cases have almost without exception shown improvement more rapid than one would expect from other methods of treatment. A striking feature in many of these cases is the firmness and thickness of the new epithelium; it is often hard to realize that it is in reality scar tissue, so closely does it resemble normal skin.

The dose that I like to give is that which will produce a decided erythema of the skin about the ulcer. The average initial exposure in my cases has been two minutes at a distance of ten inches from the source of light; the ulcer itself and a band of surrounding skin an inch wide being exposed, the skin beyond this being protected by gauze or paper. If the dose has been correctly gauged, and this is not always easy, a decided erythema appears the day following the exposure, this erythema lasting about a week, but causing little discomfort as a rule, in fact it is not infrequent that pain incident to the ulcer is greatly relieved. Most of the cases treated have had weekly exposures, as this has been found to produce the best results. It is probable that nothing is gained by more frequent exposures. I believe that in ulcers of the skin, especially those of a varicose type, ultra violet light will produce more rapid healing than can be obtained by any other known method of treatment.

Another skin affection often greatly benefited by quartz light is the flat vascular naevus, the so-called port wine mark. In these cases the Kromayer lamp is much superior to the Alpine sun lamp, for the Kromayer lamp can be pressed firmly against the skin, thereby pressing the blood out of the superficial vessels, allowing deeper penetration of the rays, which at best have but little penetrating power. Treated in this way with exposures of five to twenty minutes, improvement follows in the majority of these cases. Fifty per cent. improvement after a single treatment is not very unusual. Of sixteen successive cases of this type that I have treated in private practice the amount of improvement was "worth while" to the patients in all but two cases. These two were almost complete failures, both having dark skins highly resistant to light. It is quite possible that even in these cases, results could have been obtained if much larger doses had been used.

Port wine marks that fade on pressure, as a rule are by far the most amenable to this treatment, a fact which helps greatly in prognosis.

The desired reaction in these cases is a blistering burn of the area treated, for if such a reaction is not produced, little improvement can be looked for. Such a burn over a small area, 4 or 5 cm. in diameter, causes only slight discomfort, rarely enough to cause any loss of sleep. Furthermore, the treatment itself is absolutely painless and hence easy of application in children as well as adults.

A warning against the too free use of radium in port wine marks seems timely. Valuable as radium is in cancer of the skin its use in benign lesions, especially in children, should be attended with extreme caution, for a result that may seem almost perfect, one or even several years after the application of radium, may be deplorable ten years later, when the girl of eight has reached eighteen, the age at which she wishes to appear at her best. The changes in the skin induced by radium seem to go on forever; therefore, in every case, in children at least, we should look forward at least ten years rather than to the immediate results.

Another affection which often responds very favorably to quartz light is alopecia areata. Bald areas of long standing often show regrowth of hair after four or five exposures to this light at intervals of two to three weeks, the lasting active hyperemia induced seeming to give new life to the hair follicles. In senile or premature alopecia of the usual type, on the other hand, the value of quartz light is doubtful, and in these cases I do not feel justified in advocating its use.

In psoriasis, especially those cases showing a few chronic patches of the disease which have proved resistant to the usual methods of treatment. quartz light is often a great help. Here again the Kromayer lamp sometimes proves more efficacious than the Alpine sun lamp, though definitely good results may usually be obtained by either lamp. Relapses are the rule, however, as after other methods of treatment. Two cases of psoriasis of the nails, of long standing, have shown marked improvement after a few exposures.

Resistant patches of chronic eczema are frequently greatly benefited by quartz light. The itching can usually be greatly relieved and the thickened infiltrated skin may rapidly approach the normal in appearance.

In pruritus ani distinct benefit has been obtained in several of the writer's cases though relapses will very likely occur.

Severe cases of pustular acne vulgaris, where the lesions are large, respond well to quartz light and in selected cases it has proved its value beyond a doubt. In those cases of acne in which the skin is pale and oily, the active hyperemia induced by the rays usually lead to rapid improvement. It is, I believe, advisable only in selected cases of acne as the erythema produced, even though temporary, is often objected to by the patient.

Enough has been said to indicate the therapeutic possibilities of this light in dermatology. It has a wide field of usefulness. It should come into more general use.

It is not to be denied that the ultra violet rays of natural sunlight are capable of accomplishing much, as Towle[2] has demonstrated, but the sun is not always at our disposal and even when it is, it does not always have sufficient power to produce the desired reaction. Furthermore, it is a time consuming process at best, taking hours to produce effects that may be produced in minutes by the use of quartz light.

Ultra violet light produced by other artificial methods may also accomplish as much, but taking into account simplicity, ease of application, and results obtained, I believe that quartz light as produced by the Kromayer and the Alpine sun lamp is at the present time the most valuable form of ultra violet light used in dermatological therapeutics and that in this field it stands today as one of the most valuable discoveries of the twentieth century.

REFERENCES.

[1] Freiberg: Journal Orthopedic Surgery, 1917, Vol. xv, p. 625.
[2] Towle: Journal Cutaneous Diseases, 1915, Vol. xxxiii, p. 347

DISCUSSION.

Dr. Loretta J. Cummins, Boston: Dr. Oliver has so fully covered the subject of the treatment of dermatological conditions with the quartz light that there is very little for me to say, but perhaps to emphasize some of the statements which he has made. In varicose ulcers I believe the quartz Alpine lamp is the ideal method of treatment. In the first place, there is almost immediate relief from pain, and the patient isn't handicapped by being obliged to give up work. He is able to be around and to attend to business, and the economic value of that is important. In the treatment of varicose ulcers I use the lamp alone, because I believe the lamp will do everything in the way of stimulating granulating tissue. In those cases I usually apply boric acid ointment so that the dressing may be more comfortable but not for the therapeutic use of the ointment. That is the only condition in which I could state that the lamp will do everything alone. I believe it is a very valuable aid in treating other conditions. Acne vulgaris, especially the type in which there are large papules and pustules with seborrhea and comedones, responds very readily to treatment with the Alpine lamp. In these cases I remove the blackheads and open the pustules and take into consideration the problems of hygiene and general health and give internal and external treatment, but I use the lamp and consider it a very valuable adjunct and believe that it shortens the course of the treatment. Of course, most of my patients are women and I find very few who have objected to the erythema which Dr. Oliver speaks of. I usually turn the patient's head to one side and cover the eye with a small pledget of cotton and if the erythema is even, the patients do not object to it because it lasts only a few days. At the end of a week peeling has begun and the result is so excellent the patients do not object to the treatment—that is my experience. One case in particular that I treated,—a woman who had acne for a great many years, of the papulo-pustular type,—had not responded to various ointments and washes and internal treatment; she had had vaccines also, and I had given her the best treatment that I knew and then I tried the lamp without anything else. I gave her three treatments at weekly intervals, and the process entirely disappeared. The lesions gradually subsided, and she has remained free from any acne lesion for over a year. That is the only case that I feel the lamp has done the work alone. I do not depend on it alone for the treatment of dermatological conditions except for varicose ulcers. In psoriasis and chronic eczema it helps to clear up the lesions simply because it stimulates absorption, I mean in the chronic, thickened, indurated forms of eczema. I have only begun to use it in the more acute conditions, so that I cannot really state that it does very much for those cases as yet, but I am getting to be much more daring, and use it wherever there is very much itching. In the acute eczemas where there is a great deal of itching and irritation, the lamp seems to have a soothing effect. In varicose ulcers one of the very valuable things in the treatment of the ulcer is that the pain is relieved immediately.

In alopecia I believe the lamp is valuable in treating men where there is a decided baldness, but in women I do not think the lamp does very much because the penetration is very feeble. In some of the post-influenza alopecias where the hair is very sparse, and in alopecia areata the lamp does aid because one can get a decided erythema, but unless one can see the scalp clearly, I do not believe the lamp does much good, because the penetration is so feeble. Seborrhea, either of the scalp or of the face, responds very readily to lamp treatment. If one wants to use it in women, it means a much longer course of treatment because their hair has to be parted every inch or half-inch and it means a long process; but where the hair is thin it works excellently.

One advantage in using the Alpine lamp is that there is no danger to it, and in any case where stimulation is required one can get it very readily from the lamp, and there is no danger of scarring or of giving an overdose. I think the tendency has been rather to give too small a dose than to give too much. The only thing that one can do is to cause a severe sunburn, but there never is any danger of destruction of tissue or any harmful effect from it. Occasionally patients will complain of headache for a short time, but usually that is due to poor ventilation in the room. In pruritus, the same as in eczema, there is marked relief from itching following the lamp treatments.

Dr. Harvey P. Towle, Boston: You have heard what the lamp will do, therefore it is not necessary for me to repeat that. We understand as yet very little about the physiological effects of light upon tissues. It is not a new subject, however. I believe that Herodotus mentions the fact that heliotherapy is good for certain ills of man. Certainly that is rather old. Finsen was the first to make a real study of the application of light to therapeutic uses. As you know, in the treatment of tuberculosis the Finsen lamp has done remarkable things. It needs a large equipment, both physical and personal, and therefore it has not come into common use because of the difficulties attendant upon its use. It requires a number of attendants and the apparatus is complicated and expensive.

Sunlight contains all the rays, as you know, from the infra reds through the reds to the violets. In the x-rays we have the ultra violets, and we have some of the other more penetrating rays. In certain fluorescent substances we get deep penetration. There we get the deep penetrating infra reds and infra greens. It is of passing interest, however, to know that certain men have used those penetrating rays as carriers of the less deeply penetrating; for instance, take fluorescin—they have used that in conjunction with the x-ray on the theory that the deep rays would carry the ultra violet with them, and the effects have shown that that is true.

To sum things up: Light has certain local actions varying somewhat according to its use, whether it is applied locally or generally. In all forms of light therapy there is a certain sense of increased well being. I well remember in the early days of the x-ray how the patients exposed for some growth on the arm or head, universally reported that they felt better after the exposure. In other forms of light that is true also. In the various lamps which are used as substitutes for general heliotherapy there is always a production of ozone. That is to my mind the reason why they also say that they feel somewhat exhilarated. In fact, some writers lay great stress on that feeling of exhilaration. Rollier paraphrased a well-known remark by saying, that "man does not live by bread alone, he must also have light." His theory was that the pigment cells in the skin act as reservoirs. When exposed to light they store up somehow through chemical change the light rays and thereafter through the day they gave off through these reservoirs minute quantities of the light stored up. There probably is something in that. We have, of course, always advocated the exposure to light in the treatment of a great many diseases without stopping to analyze our reasons. In the local effects of these rays we get a stimulation of tissue growth. We also get a stimulation of resorption. To apply that to the quartz lamp we see how it works out. One of the star performances of this quartz lamp is in chronic ulcers. It does not seem to matter greatly whether it is an old chronic ulcer due to some septic process, chronic sepsis, or to a varicose ulcer of long duration. Pathologically speaking, anatomically speaking, the results are very much the same in that condition, and therapeutically speaking, the results are very much alike. We find first resorption and we find hyperemia through the dilatation of the vessels in the part. We find increased cellular growth with development of blood vessels and new granulation tissue. That, of course, determines an increase of blood to the part. We find a resorption as well as absorption, and it is very interesting in these ulcer cases to watch that growth taking place: first, the congestion of the part—you can watch it in the cells growing brilliantly red and staying red, and then the gray film begins to grow; next there is an island of epithelium and that grows a good deal like a Thiersch graft. Then the hard edge sharpens down, and the epithelial cells push their way through this granulation tissue. Finally we get a good firm tissue.

At the Massachusetts General Hospital, where I have watched Dr. Oliver's experiments, it has been a pleasure to see how quickly and firmly this healing takes place.

In the other forms of diseases where we have not what I may term that contrast, but the dry, hard, non-succulent ridges such as we find in thickened palms, we get a somewhat different clinical result. There we get absorption and a throwing off of the old tissue and a replacement with new cells and a pliable skin.

I have seen very little use made of the quartz lamp for general exposures. How well it will work out in tuberculosis, for example, I am not at all certain. About the use of heliotherapy in tuberculosis, that is, by means of exposures—I have no doubt the beneficial result is not from its local action there but from its general. Whether or no this strained light, this pure ultra violet light will work out in the same way, I am not certain. I am not confident that the tanning alone is the *sine qua non.* I think there is more to it than that.

Another striking feature and one which is interesting in the use of these lamps, particularly the quartz lamp, is its use in exudative affections. We have had recently at the Massachusetts General Hospital two or three remarkably intractable cases of dermatitis herpetiformis. That is a disease which is characterized by little clusters of blisters all over the body. It is a vasomotor phenomenon, persistingly chronic and sometimes of very serious importance as far as life is concerned in the end. One case we had sent up to Dr. Oliver for an exposure with this light. The man by mistake was given an overdose. He came back to the ward with a most beautiful sunburn, with enormous red blebs, so that the skin hung in folds. He did not sleep for two nights, but when he dried up, his skin was as clear as when he was born; every trace of vesiculation had vanished.

The question of the permanency of the results is another story. We cannot say what the permanency is. It will take time. Also the value of these results—they will come out in time, of course. We are after certain physical effects all the time, and this is another means of getting those physical effects. It is not just settled what place in our therapeutic armamentarium this lamp will take.

In response to a question as to what effect these lamps will have on acute infections, as boils or carbuncles, Dr. E. Lawrence Oliver said: I have not used this light to any extent in boils and carbuncles. In one case in which I used it, I think it hastened resolution. I recently saw a man who had x-ray treatment for a boil and an x-ray burn was produced. I think this may have helped the condition, but I think the same result might have been obtained with the Alpine sun lamp without danger of telangiectases later. I do not think in most cases of individual boils it is necessary to use anything in the way of light treatment. If I did, I would use it with confidence, but I do not think it would prevent the formation of new boils, indeed I think the desquamation by removing the horny layer of the skin is likely to lessen the mechanical resistance of the skin to infection, tending to increase the likelihood of new boils. Consequently I do not advocate it except in selected cases. I think the ulcers resulting from carbuncles might be benefited by this light, by shortening the time of healing.

OBSERVATIONS UPON DUCTLESS GLAND THERAPY.

By Charles H. Lawrence, M.D., Boston.

In an article on pituitary disease, Cushing[1] makes the following statement in regard to derangements of the endocrine glands: "With a full appreciation of the close physiologic correlation of the structures, ..., and consequently of the polyglandular character of the syndrome aroused by a profound disorder of any individual number of the series, nevertheless there can be no doubt that there exists a characteristic and recognizable syndrome for a primary derangement of each individual gland, whether on the side of its secretory overactivity or its underactivity."

"Furthermore, transition conditions are to be expected, and . . . . we may anticipate clinical combinations of opposed states, the one due to a perversion or excess of secretion, and the other to a diminution or loss of secretion."

This statement forms, it seems to me, a safe and encouraging basis for the use of glandular extracts in the treatment of disease, and it is my intention in this paper to develop more fully the principles enunciated in its text.

What forms of endocrine dysfunction are susceptible of successful treatment by organotherapy? Those conditions which are more definitely associated in our minds with disease of the glands of internal secretion,—Addison's disease, exophthalmic goitre, acromegaly, etc.,—are the final expressions of disease processes. They represent what MacKenzie[2] calls the advanced stage of disease, "when it has progressed so far that it has caused destruction or modification of tissue, and when its presence is revealed by a physical sign." Such conditions, being associated with destruction or modification of tissue, offer little chance of cure, and if organotherapy is to give its best results, it must be employed during an earlier stage of glandular dysfunction.

This stage, to quote MacKenzie[2] again, "when the disease has entered the human system but has not produced any perceptible alteration of tissue, when the signs the disease produces are mainly subjective—this is the curable stage." But this is also the indefinite stage, during which the subjective symptoms seem of little value, during which opposed activities of various glands obscure the picture, making it so difficult to pick out the "characteristic and recognizable syndrome" which must determine what glandular extracts are to be used in treatment, if treatment is to be effective, and if our knowledge is to be increased by our experience.

Because of the indefinite character of the disease picture during this curable stage, physicians have often succumbed to one or two temptations, with the result that our knowledge concerning glandular therapy has progressed slowly and gropingly. The first temptation is to regard the early stages of endocrine dysfunction as neurasthenia. When a patient complains of easy fatiguability, apathy, headache, poor sleep or obstinate insomnia, depression, abnormal irritability, vertigo, faint attacks, or dyspnoea on slight exertion, the diagnosis of "nerves" seems established. Yet these symptoms, according to Falta[3] are all characteristic of Addison's disease in its early stages, and many of them occur also in cases of hyperthyroidism. It should also be remembered, therefore, that neurasthenia may be due to dysfunction of a gland having an internal secretion. Even then, the proper basis for treatment has not been reached. The symptoms may be due to trouble with one or more of several glands, and it is extremely difficult to decide which is at fault. Here arises the second temptation—to use a polyglandular preparation, on the principle that two or three chances are better than one. This method of treatment may, it is true, bring relief to the patient, but it in no way advances our ability to identify the gland at fault, and is therefore to be condemned. If we are to increase our ability to determine what glandular dysfunction is responsible for a given syndrome, it must be done by administering one glandular extract at a time, and carefully noting its effect. If no single extract prove efficient, then combinations may logically be tried according to the individual indications. By such a method, our knowledge of the characteristic syndrome of each endocrine dysfunction is gradually increased, whereas the use of ready-made polyglandular extracts sheds no light on the question as to which gland was at fault.

How are we to arrive at an intelligent choice of the preparation which is most likely to give beneficial results in any given case? First of all, by careful elimination of disease of other organs. Incipient tuberculosis, early carcinoma, anemia or leukemia may be overlooked unless careful examination is made with such possibilities in mind. Second, by a careful history. The physical examination will, in the majority of cases, reveal no cardinal sign in the early stages of endocrine dysfunction; the diagnosis depends, for positive evidence, upon the story. The characteristic feature in the history is usually a lack of normal balance—either easy general fatiguability, increased or decreased nervous irritability, deficient muscular strength, vasomotor instability, or altered metabolism. There is often a story of preceding infection or nervous strain. Such a history, in connection with a physical examination, which rules out other diseases, strongly suggests that there is disturbed function of some internal secretion. Usually if enough pains have been spent in obtaining it, the history does still more. It presents, often obscured by other symptoms, but nevertheless available, the "characteristic and recognizable syndrome" which indicates the particular gland involved.

In these days of predominance of the laboratory and dependence upon tests performed there, history taking bids fair to become a lost art. But in the early stages of any disease, the history gives more valuable evidence than any other method of examination. Physical examination will exclude organic disease, and laboratory tests are extremely useful in determining the degree of abnormal function, but the history, if the symptoms are properly elicited and valued, not only discloses the nature of the derangement present, but gives a measure of its effect upon the patient. If properly analyzed, the evidence it affords is not indefinite, but affords, especially in the case of the internal secretions, a definite basis for differential diagnosis. For example, the characteristic expression of thyroid function is through the nervous system. Numerous and varied as the symptoms of thyroid derangement are, they are expressions of altered irritability of the nervous system, especially the vegetative division. Therefore the patient with slight malfunction of the thyroid complains of symptoms which are referable to disorder of the nervous system primarily. Such symptoms are also connected with disturbances of other glands, but do not occupy so prominent a position in the picture. A history of the character indicated accuses the thyroid gland. An increase in the basophiles in the blood, a pathological response to the Goetsch test, and an abnormal basal metabolism make suspicion a certainty, and no attempt should be made to treat the patient without having the aid of as many of these tests as are available.

The basal metabolism test deserves special mention as a method of detecting thyroid derangement. It involves no particular discomfort and only moderate expense to the patient. It requires little time, it is becoming available to the general practitioner, and its use gives a definite statement of the activity of the thyroid. It seems possible that tests of the activity of other glands might be evolved were sufficient attention given to the matter. Such tests would be of enormous value, since they would make it possible to determine the symptom complex of each glandular derangement.

Contrasted with the neurological tinge which dysfunction of the thyroid gives to the history, disorders of the adrenals are characteristically expressed in alterations of ability to mobilize energy. Thus hypoadrenalism is associated with weakness of both voluntary and involuntary muscle. This condition appears in the history as easy fatiguability, loss of muscular power, circulatory disturbances and the like, but the altered nervous and psychic reactions are not present in any striking degree. Laboratory tests often disclose anemia and hypoglycaemia, but there is no test of adrenal function which gives such valuable results as does the estimation of basal metabolism in thyroid derangements.

In searching for the characteristic syndrome of ovarian dysfunction, the influence of the gland upon the blood flow suggests that its most dominant activity (if its influence on sex characteristics be excepted) is related to the circulation. The phenomenon of catamenia is the most striking evidence of normal ovarian activity, and the symptoms caused by abnormal activity are logically found to express themselves in disturbances of the circulation. Flushing, headache, variable blood pressure, or similar evidences of unstable circulatory equilibrium are the most common and the most important symptoms of ovarian dysfunction (See Graves[4]).

It is true that with ovarian dysfunction there is usually more or less nervous irritability or depression, but it is, I believe, secondary to, and dependent on the circulatory instability. Further, the knowledge, or even suspicion, that the ovaries are not normal, is sufficient cause for nervous symptoms in any woman, since she has an inherited dread of such a condition. The nervous symptoms in thyroid derangement are, in contrast, without demonstrable basis until the improper function of that gland has been demonstrated. The tendency to adiposity, and abnormality of sex characteristics are not symptoms of early stages of ovarian dysfunction but end results. Their presence confirms the diagnosis at times, but their absence does not detract from its probability, in the early stages.

Disorders of the pituitary body cause a most complex picture, since the structure is really two glands, having separate functions. There may exist over or under-activity of either part separately, or both parts together, or overactivity of one lobe and simultaneous underactivity of the other.[1] It is not possible always to decide which of these possibilities is present, one must be content at first with the diagnosis of disturbed pituitary activity. The characteristic symptom of such a condition is, I believe, derived from a function of the pituitary found in its full development only in certain animals. Bell[5] and others have pointed out that the pituitary apparently controls hibernation in such animals as possess the habit. In those cases of early pituitary dysfunction which I have been able to observe carefully, symptoms were present which suggested in a mild degree the phenomena of hibernation. Abnormal desire to sleep, occurring without previous lack; aversion to effort, without weakness; and deranged carbohydrate metabolism, are the most constant symptoms of early dyspituitarism. The first two symptoms will appear among a host of others in a carefully taken history, the last can be detected often by slight traces of sugar in the urine or by determining the carbohydrate tolerance. Roentgenograms of the sella turcica will be helpful, usually, if headache be present, but they may often show nothing abnormal. The long bones may show suggestive abnormality of ossification.

There are doubtless characteristic symptoms of the other endocrine disturbances, for example, tetany in hypoparathyroidism, but they have not yet been identified in the confusing syndrome of which they form a part. It is not necessary to enumerate them here—sufficient evidence has been cited to show that every glandular derangement has its typical symptoms. The great difficulty lies in their identification. I do not wish to give the impression that I believe this is usually easy, or that the symptoms which I have described are the most prominent in the picture. Often the reverse is true—the patient lays much more stress on some symptom which suggests endocrine dysfunction in general, but does not point toward any particular gland. It is only by careful questioning, and careful evaluation of the symptom elicited, that the syndrome characteristic of the primary condition is obtained. I wish to emphasize the fact, however, that if treatment is to be anything but haphazard, such a syndrome must be identified in the history. If it is not, there is no logical indication for glandular therapy.

The following case will illustrate the point: The patient, a trained nurse, 37 years old, was referred to me in June, 1919. Her record states that since the age of 13 she has had frequent attacks of what she called "hay fever," manifested by coryza and irritation of the pharynx and larynx. For the past three years asthma has been added. The attacks are more frequent in winter than summer. Cutaneous tests have been made, and these showed negative reactions to all the pollens, but positive reactions to milk, meats, several kinds of fish, many vegetables, chocolate and coffee. Omitting these articles from the diet eliminated the asthma, but the patient cannot maintain her weight. She was referred to me purely on this account. There is no family history of asthma. Her respiratory tract has been examined and treated without benefit. Her teeth have been searched and found guiltless. The picture seemed one of anaphylaxis—due to improper metabolism of many articles of diet. Careful questioning brought out the following additional facts: For many years the patient has been bothered by extreme sleepiness. This was not due, she thinks, to fatigue, as the desire for sleep might come on any time, anywhere, irrespective of the amount of rest she may have have had. At about the age of 16, she had grown tall very rapidly. She had never felt weak, and was not nervously irritable. There was nothing remarkable about the catamenia.

Physical examination showed no organic disease. The patient was tall and rather thin, weighing 118 pounds. The skin was smooth, nails thin and brittle. Hair dry and rather scant. Blood pressure normal.

Examination of the blood showed nothing abnormal. The urine, however, showed a very faint trace of sugar by Benedict's test.

Tucked away in the picture were several small points which were highly suggestive of pituitary dysfunction. The somnolence, the rapid growth to a height above average and the unstable metabolism as evidenced by the cutaneous tests and the slight glycosuria suggested that the pituitary might have some causal relation to the other atypical but more prominent symptoms.

The patient was given whole pituitary substance in small amounts, and advised to eat all kinds of food. Since that time she has had no anaphylactic symptoms as long as she takes the glandular extract. She is eating a general diet. She has gained seventeen pounds. Omission of the pituitary substance is always followed, within forty-eight hours, by return of the anaphylactic symptoms.

The instructive points in the case are that it illustrates the fact that the characteristic symptoms of the glandular derangement were not those for which the patient sought relief, and that the exact nature of the derangement is not now clear. There was nothing suggesting acromegaly, and no adiposity. The classical signs of the later stages of the glandular disease are usually not present in the early periods. And finally, the case illustrates the method of deciding which glandular extract is to be tried first in any given case.

The selection of the proper glandular preparation is probably the most important point in insuring success in the treatment of endocrine derangements, but there are other factors which, if neglected, will postpone or vitiate results of treatment. Most of these early glandular derangements are sequellae of infections or prolonged overstrain. Therefore rest is an important part of the treatment, and is sometimes sufficient to re-establish normal glandular activity, without other measures. It must, however, be real rest, physical and mental. The diet, of course, should be as attractive and varied as possible, and should contain a sufficient amount of protein to aid in tissue repair. The glandular extract should be administered at first in small doses, and the patient must be closely watched until the possibility of untoward effects is eliminated. All these conditions can be most easily and efficiently fulfilled by having the patient in a hospital for a short time when treatment is begun.

When the patient's tolerance for the preparation is established, the dose should be increased until some effect, either good or bad, is noted. The proper dose in any case is the same as that of any other drug—enough to give results. If the small dose is tried first, and the patient watched closely, serious untoward effects are not likely. If adequate amounts of the preparation produce no results, there are two courses to pursue: First, it must be demonstrated that the preparation employed is active. The potency of the glandular extracts in the market varies enormously according to the manufacturer and, probably, the age of the preparation when dispensed. Therefore, if results are not obtained with any given preparation, it should be remembered that it may be nearly, or quite, inert. Second, if the preparation is found to be active, then the extract of another gland should be tried, choosing the one which stands second in the list of probabilities. Then if no single glandular extract proves beneficial, it becomes logical and reasonable to employ combinations of synergistic extracts. Such combinations should be made as the symptoms warrant. Ready-made combinations during the experimental stage of the treatment are objectionable for two reasons: It cannot be determined which element gives the results, and the amount of one element cannot be varied without a similar variation of each of the others. When the proper combination of elements has been determined, there is no objection to putting them all into one preparation, but the use of ready-made combinations before this point hinders progress in glandular therapy.

Concerning the use of each glandular preparation there is little definitely established knowledge. It is generally believed that high blood pressure contraindicates the use of the extract of the posterior lobe of the pituitary. Certainly, under such conditions it should be given only if the need is great, and then the first dose should be very small. Given by mouth, the effect is much less than when given intramuscularly. Subcutaneous injections are likely to cause sloughs. A decompensated heart or respiratory failure is regarded by Bell[5] as absolute contraindications to its use.

Concerning adrenalin, there is a general belief that oral administration is useless, since the substance is destroyed in the stomach. This has been demonstrated beyond reasonable doubt in normal subjects. I am not sure that it holds true in individuals suffering from lack of adrenal secretion. The few cases of this condition which I have treated seem to have been benefited by full doses of adrenal substance by mouth. Harrower[6] has suggested that when the patient is suffering from lack of a secretion there exists what he terms "hormone hunger," in which condition the needed substance is assimilated more rapidly and thoroughly than under normal conditions. At all events, it is worth while trying the effect of oral administration, when hypoadrenalism exists. If rapid results are demanded it should be given subcutaneously.

The other two glandular preparations in general use, thyroid and ovarian extract, have no absolute contraindications. I believe thyroid especially, however, should be given cautiously until its effect is demonstrated. The use of other glandular extracts, and the use of antagonistic extracts, are still so imperfectly understood that I shall not attempt to discuss the subject. Nor does the use of these substances in obstetrics or surgery fall within the scope of this paper.

In conclusion, I believe:

That the symptoms of the early stages of disordered endocrine function are at present not well understood, and therefore often overlooked.

That though the symptoms of such conditions are often polyglandular in character, there exists a "characteristic and recognizable syndrome for a primary derangement of each individual gland."

That the recognition of the syndrome is essential for intelligent glandular therapy.

And that while the characteristic syndromes described in this paper may have to be revised in the light of more knowledge, they do offer a working basis for the treatment of derangements of internal secretion.

REFERENCES.

[1] Cushing, Harvey: Am. Jour. Med. Sci., 1913, cxlv, p. 313.
[2] MacKenzie, James: The Future of Medicine.
[3] Falta, W.: The Ductless Glandular Diseases.
[4] Graves, W. P.: Surg., Gyn., and Obstet., 1919, xxix, 527.
[5] Bell, W. Blair: The Pituitary.
[6] Cushing, Harvey: The Pituitary Body and its Disorders
[7] Musser, J. H.: Am. Jour. Med. Sci., 1913, cxlvi, 208.
[8] Timme, W.: N. Y. Med. Jour., 1920, cxi, 226.
[9] Timme, W.: Arch. Neurol. and Psychiatry, 1919, ii, 240.
[10] Bandler: Am. Jour. Obstet., 1919, lxxx, 826.
[11] Lescohier: Med. Record, 1919, xcvi, 532.
[12] Kerr: Arch. Int. Med., 1919, xxiv, 347

DISCUSSION.

Dr. M. J. Konikow, Roxbury: I would like to ask Dr. Lawrence if there are any preparations in the market to which he particularly refers. There are so many of them that one is at a loss to know which to use. Which ones does he suggest?

Dr. Charles H. Lawrence, Boston: I have always found the Burroughs, Wellcome preparations satisfactory. In the case of the pituitary my obstetrical friends tell me that they think it has a much more powerful effect on the uterine contractions than any other preparations they can get. I have used these preparations exclusively because they have answered satisfactorily the call for an accurate preparation. It isn't fair for me to say that none of the other preparations is good because I have not tried them out, but I can state that these preparations are satisfactory and they give satisfactory results if the indications for them are there.

Observations upon Various Types of Diabetics under the Present Method of Treatment.

By F. Gorham Brigham, M.D., Boston.

It is now six years since Dr. Allen read his preliminary paper in Boston, which revolutionized the treatment of diabetes mellitus. Although this brief time is in no way sufficient to draw final conclusions, yet from the results obtained, on account of the large number of cases available for study in the various clinics here in Boston, there has accumulated a large amount of interesting data which has been carefully reviewed and is well worth recording.

STATISTICS.

Statistics are always interesting, but in a disease like diabetes statistical data can be based only on dead cases, and, as I said before, with only six years' material available it is not yet time to draw any final conclusions. On the other hand from mere observation of cases seen and followed, it is certain that in the severe types and in children, life has been very much prolonged, and that in the mild cases represented by the obese, the arteriosclerotic, and the nephritic, not only is life much prolonged but the serious complications of the disease, such as cataracts, gangrene, rapidly advancing arteriosclerosis, and the distressing symptom of tabes, arthritis, neuritis, and pruritis have been very much reduced.

A very interesting and striking bit of statistical data is the figures as to the mortality of cases admitted to the Massachusetts General Hospital. From 1914 to 1920 there have been admitted to the main hospital 628 cases of diabetes and the death rate of these has fallen from 28% in 1913 to 5% in 1919. In private practice this figure was even lower, it being 2% in an even larger series of cases. The above figures and the rapidly falling admission death rate represent the result since the introduction of the newer methods of treating this disease.

Boston has been fortunate in having several large diabetic clinics, and some very interesting observations which will be of statistical value in the future have been made. Probably the largest clinic is that in the Out-Patient Department of the Massachusetts General Hospital. Since the clinic was started in 1914, there have been admitted over 600 cases exclusive of those in 1920, of which over 400 new and old have been seen since June, 1919, when the regular work of the clinic was started again. Previous to 1914, only 1,939 cases of so-called diabetes had been admitted to the Out-Patient Department since its very beginning, so that the figure of over 600 shows what a large number of cases are coming under observation.

The clinics at the City Hospital, the Brigham Hospital, and the Boston Dispensary also have a surprisingly large number of diabetic patients. With these large groups available, together with many hundreds more in private practice, it is hoped that in the next few years an opportunity will be offered to get together and compile some very interesting data. Nevertheless, from the handling of this large number of cases very definite practical working ideas have been formed and interesting observations upon various types of diabetics under the present methods of study and treatment have been made.

LABORATORY DATA.

Probably the greatest one help we have to day in classifying and treating carefully this disease is the new methods of blood analysis as well as the simplification of other routine quantitative methods of analyzing the urine and the CO_2 content of the air exhaled from the alveolar spaces of the lungs. The present accurate methods simplified during the past few years for detecting the amount of sugar, nitrogen, and fat, as well as acetone and carbon dioxide in the blood enable us more accurately to estimate the severity of the disease when first seen: and also allow us to treat them more carefully by the data which are thus obtained. The routine analysis of the blood, quantitatively, for sugar, nitrogen, and fat, and in acidosis for CO_2 give very definite evidence as to the type of treatment to follow, and by checking up these analyses routinely, more often in hospitals than outside, and thus saving time, the results of the treatment are kept account of and trouble often averted.

Of as much importance as the blood work is the study of the kidney function. The large majority of the diabetics past forty have as a rule considerable arteriosclerosis with more or less impairment of kidney function. In this type of case, by lifting the load of the kidney as far as protein and salt are concerned, a very liberal diet in carbohydrate can be given, and no sugar increase in the blood or appearance in the urine develop.

From observation it seems that of all the diseases where these chemical methods have been introduced as part of the handling of the disease the most satisfactory and accurate results have been obtained with diabetes. Chart after chart of these cases shows definitely where with the inability to handle fat, and in increasing blood fat or lipaemia, the ability to handle carbohydrate decreases and the blood sugar goes up. This blood fat estimation does not need to be done very often as is shown from reviewing over 200 analyses, but it is of help in the cases described above and until the fat content of the blood is reduced no progress in increasing a sugar tolerance is possible. The old method of treatment with high fat in the diet has undoubtedly killed more diabetics than it has helped, and to date there is no way of recognizing a lipaemia without this analysis. A high blood fat is most often found in the more severe type of case.

Again in the arteriosclerotic and nephritic type of case with a high non-protein nitrogen in the blood and a low phenolphthalein test, it is impossible to make them sugar free and keep them sugar free with this ingredient of the blood high. It is striking to see the phenolphthalein test rise in percentage, the urine concentrate, the blood pressure fall with the fall of the blood sugar, and the increasing tolerance for carbohydrate as this nitrogen content of the blood is reduced. There are many cases of this type where at first the kidney seems impaired as to function, and who during the initial treatment are unable to handle protein food. Even on a low protein diet these cases eliminate a tremendous amount of nitrogen in the urine, and their blood nitrogen is high, but they finally readjust, and as their kidney function improves and blood nitrogen gets lower they are able eventually to handle more protein food: as is the case with most of the severe young diabetics.

In the obese, the arteriosclerotic, and the mild nephritic type of case with sugar in the urine, it is by the blood examinations alone that we treat and guide them, and not by the presence or absence of sugar in the urine. For with high blood figures, the damaging complications of diabetes can develop and progress just as rapidly as if sugar were in the urine and also there is a very low resistance of these patients against any type of infection, with their blood sugar high.

These facts have been vividly demonstrated in the Out-Patient Diabetic Clinic at the Massachusetts General Hospital. Before the war blood-work was not being done in this clinic, but since June, 1919, careful blood analyses on several hundred cases have been done. Whereas a large group of the cases mentioned above returned, having had no sugar for 18 months or more, they divided themselves into two classes as a result of the blood examinations; those who had done well and developed no complications, and those who had done poorly and developed gangrene, cataracts, a more extensive nephritis, and extreme arteriosclerotic changes with tabes and other distressing symptoms.

The only evidence obtainable to explain this condition was the normal and abnormal blood findings. This fact is much more striking in private practice where the follow-up system of checking patients has shown remarkable results. Of course a lot of laboratory work has been done, the worth of which has yet to be proved. New ideas are constantly developing as data accumulate but it is certain that with some of these tests, the value of which has been proved, and the using of these methods with care and thought, and not in a routine way only, we work with considerable more confidence than before when we had only the urine examination to serve as our guide.

The day of starving a high blood pressure case who has good kidney function and can handle protein food without any retention, and neglecting to pay any attention to his salt metabolism when it, and it alone, is proved to be the cause of symptoms, has passed.

Another laboratory method of questionable value in diabetic cases is the so-called "sugar tolerance test," in which certain definite amounts of glucose and water, depending on the weight of the patient, is ingested, and the blood taken before and at stated intervals afterwards. Striking curves are observed and in questionable cases where a trace of sugar has been found and yet normal blood curves are observed, one treats them very much less radically than if a definite and persistent rise in their blood sugar curve is found. This test is of value in the early Graves' disease and disturbances of the pituitary gland.

By taking careful histories and studying all patients with sugar in the urine along the lines outlined above, it is possible to place each case into a so-called class or group.

CLASSIFICATION.

There is no accepted grouping of cases by all the workers in diabetes. By far the smaller number of cases are the so-called "true diabetics," represented by the child, the young adult, or the thin individual in middle life or even early old age in whom one finds all the cardinal symptoms and signs such as polyuria, polydipsia, polyphagia, with loss of weight and strength.

The second group of cases, a small portion, is represented by those with low sugar tolerance, often seen in the candy factory girl or the consumer of large amounts of concentrated carbohydrate food, and who has no true diabetic symptoms, but in whose urine sugar in large amounts is found in the course of an examination for debility, anemia, and possibly some loss of weight. Their blood findings are usually normal, but if such cases are neglected or overlooked they develop into true diabetics of the first group. Usually a sensible rearrangement of their diet straightens them out, but they should be kept under observation.

The third group is represented by the obese patients usually seen between the ages of 30 to 50, all giving a history of having almost doubled their weight, the men usually after getting married, and the women following their first baby, or at the menopause. The prognosis of these cases depends on how early they are diagnosed, but most of them by being treated conservatively for their obesity, rapidly clear up and seem to have an almost unlimited tolerance for carbohydrate when once they have reached their normal weight. It is in this group, especially among the men, that the blood sugar figures are quite low, but the blood nitrogen is quite high with a normal phenolphthalein test and a normal blood pressure. The restriction of protein food with a reduction of the blood nitrogen may straighten them out without any carbohydrate restriction at all. The "tolerance test" also helps. We do not know much about this type of case but certainly it seems as though the internal secretions had something to do with their development, but possibly overweight and overuse of the pancreatic function is alone responsible for this trouble.

A small group of cases appear during pregnancy, in thyroid diseases, and other endocrine conditions, and those with a positive Wassermann. The presence of sugar in the urine of a pregnant woman is variably stated by obstetricians and other writers to be found in from 10% to 40%. Pregnancy occurring in a diabetic is more serious than when the diabetes develops during pregnancy. This condition usually starts in the second or third month, when the breasts begin to develop rapidly. From the slightest test for sugar which does not ferment with yeast, up to 6% to 8% of sugar with all the symptoms of true diabetes may be found. The earlier recognized and treated the better the results. They all show an increased tolerance as term approaches, due to the help from the baby; but after delivery must be carefully watched and treated; for with the birth of the baby the tolerance often falls considerably, and grave complications, even acidosis and death, may result. These patients must also be carefully followed for months after delivery, for if neglected, a true diabetes may develop. From observing many of them, there certainly seems to be an underlying factor which has not yet been determined.

The thyroid and endocrine cases usually present other symptoms and physical findings which allow them to be diagnosed. They always show only small amounts of sugar in the urine, and do show a slight increase in the blood sugar, and with the tolerance test we get a rather striking curve. Their treatment is for the underlying cause.

The cases with positive Wassermanns, representing about 2% or 3%, although presenting large amounts of sugar in the urine, with high blood findings, usually are not as sick as one would expect. With proper antisyphilitic treatment they improve with much greater strides and more satisfactory results than those cases representing the same initial picture but with a negative Wassermann. One very mild case of this group recently had a pneumonia and rapidly became a very severe diabetic.

This brings us to the last group of cases, by far the largest, represented by the arteriosclerotic and those with kidney impairment or circulatory trouble. These may be purely cardiac, cardiorenal, renal, or a general sclerotic condition without much evidence of kidney impairment, but who undoubtedly make their sugar from excessive protein food. These patients are always most interesting, and just as careful study of the kidney function and the condition of the heart is necessary as the study of their sugar metabolism. As said above, it is most striking in these cases with high blood sugar and nitrogen, with low renal function and low specific gravity, with polyuria and high blood pressure, to see the phenolphthalein test rise in percentage, the urine concentrate, the blood pressure fal with a fall of blood sugar and an increasing tolerance for carbohydrate, as the nitrogen content of the blood falls. The treatment of the heart often helps, and the giving of digitalis and planning a cardiac routine may often increase a patient's carbohydrate tolerance considerably. On account of the frequency with which these patients have difficulty in handling salt, this factor of the diet must be borne in mind, and the intake controlled, especially where there is extreme high blood pressure. A sudden gain in weight can often be due to the retention of sodium chloride.

There is still another group which is most difficult to classify. These are represented by healthy appearing individuals who have considerable sugar in the urine, a moderate elevation in the blood sugar, but have no particular symptoms, no loss of weight, and who give a history of the disease for years without any apparent harm resulting. If treated as the others are, one can often do them more harm than good, but they should be studied but never overtreated. It is wise to consider all patients showing sugar in the urine as diabetics until proven otherwise.

TREATMENT.

The present treatment of all diabetics today is more or less based on Dr. Allen's ideas, *viz.*, starvation or fasting. It is the result of his work which makes it possible to make and keep these patients sugar free. As time goes on various modifications have developed, for there are a great many cases, in fact a large percentage who do not need to undergo strenuous fasting with loss of weight and strength to accomplish their sugar-freedom. It is better to have the patients under observation for a longer period of time and maintain strength, than to put them through a too severe initial fast. It is often hard to convince a patient that he is better after losing considerable weight and appreciable loss of strength.

When there is severe acidosis, rigid starvation often seems to do harm, but there are certain cases who respond beautifully to this method of treatment. Complete laboratory data at the start give the key as to how to treat each individual case. The most practical and satisfactory method of treating all classes of diabetics is along the lines described and taught by Dr. E. P. Joslin. To get good and consistently lasting results from treatment the first and most important requisite is a thorough study of the individual case; next the education of the patient in the knowledge of diets, food values, and urinalysis; and lastly a following-up system which keeps the patient under observation and supervision without necessarily keeping the disease constantly before his mind.

Another very important part in the treatment of diabetics is not to be constantly increasing the diet. During the initial treatment their tolerance for carbohydrate, protein, and fat is found, and a total number of calories given which will keep the patient's blood figures normal. Some can take 30 calories per kilo, some 20, some less; others could take

40 or 50; but it is safe not to go over 30 calories per kilo unless the patient is a child, when a greater number of calories per kilo can be given with safety. Loss of weight is always a worry to patients, but if a case has a pancreas which can handle 20 calories per kilo at 90 pounds weight it is better to keep to this figure than to try to give more and eventually get into trouble. It is in these cases that the food-substitute containing no value can be used, but too much of this type of food is in the end harmful, as patients should be encouraged not to be eating all the time.

The careful regulation of fluids and salt are essential, as a distressing oedema often results when too much salt is used.

It is advisable when a patient leaves the hospital, after having been carefully studied and their tolerance obtained, to start them off on a lower diet, as the change from the hospital to the home often gives opportunity for mistakes with resulting trouble. Part of the initial treatment is the recognition and removal of all possible foci of infection, for to a large extent the prognosis of the severe type of diabetes depends on the freedom from acute infections: an ulcerated tooth has often been the immediate cause of a precipitated coma. Surgical conditions, especially septic in type, are very common in diabetics, and it requires the greatest skill on the part of the surgeon, both in his method of anesthesia and in his surgical procedures, to bring the case through successfully; just as it requires care on the part of the medical man to prepare the patient for the operation and carry him along after the surgeon is through.

The treatment of impending coma and severe acidosis is a very difficult problem, and requires all the skill that the doctor, the nurse, and a well equipped laboratory possess. Many a patient on the verge of coma, if brought through, proves to be of the mild type, and will live for many useful years.

PROGNOSIS.

Until something more definite as to the cause of diabetes is discovered, and with the knowledge we have as to the pathology of the disease, it would seem that the prognosis of diabetes must be in the future as in the past, rather grave. As patients come to the doctor they divide themselves into three groups: the severe, the moderately severe, and the mild. For the severe class the prognosis is certainly grave, for the moderately severe and the mild the outlook is more hopeful but only where the patient realizes his condition and where the doctor has given him every opportunity to keep well by study of his case, the prevention of intercurrent disease, the instruction in treatment, and the planning of his daily routine. The severe case, however, is the one whose early diagnosis was overlooked, or if recognized early his initial treatment was poor, so that the real prognosis in this type of case depends on an early diagnosis and a thorough education as to diet, and mode of living early in the disease.

Certainly as one follows large numbers of cases today and compares them with those seen previously to the modern method of treatment, one should be very optimistic as to prognosis. Certainly the large majority are much better than they used to be. Diabetes is a very common disease but by careful routine, twenty-four-hour urine examinations, once yearly at least, and the education of the public to the need of this examination, an earlier diagnosis will more often be made. With our modern methods of treatment better results will be obtained until a true cause of the disease is found and a specific treatment discovered.

CONCLUSIONS.

From the study of a large number of diabetics over a period of ten years, the following conclusions are drawn:

1. That by all the modern methods of low calory diet, the diabetic patients do better than by former methods.
2. That without careful blood estimations, diabetics cannot be satisfactorily treated and good results obtained.
3. That the complications of diabetes will develop even though the urine contains no sugar if the blood figures remain high.
4. That the prevention of obesity will reduce the number of diabetics tremendously.
5. That the study of other functions such as kidney function, and the removal of all possible foci of infection, are essential to having the diabetic patient do well.
6. That routine twenty-four-hour urines must be more frequently done, or routinely done, to be able to recognize diabetes as well as other kidney conditions early, and allow earlier treatment.

7. That the disease diabetes illustrates the importance of laboratories where simple routine analyses can be done at a reasonable figure.

DISCUSSION.

Dr. Elliott P. Joslin, Boston: Dr. Brigham's statistics from the Massachusetts General Hospital are very interesting because they show the increasing extent to which diabetes is recognized. He reports 600 cases having been treated in the last six years, as compared with a total of 600 cases in the preceding 90 years. Today a doctor starting in practice has six times as many cases of diabetes to treat as did his father. This comes about in two ways:—More cases are recognized, and in the second place, the cases on the average, as far as I can determine from a study of my own fatal cases, live about twice as long as prior to six years ago. Therefore, it behooves physicians to devote far more time to the study of diabetes today than formerly. Here is the opportunity for the young man first starting in practice.

The prevention of diabetes is an important task for the practicing physician. Dr. Brigham has also emphasized this in his discussion of the etiology of the disease. Certainly two-thirds and very likely three-quarters of all the cases of diabetes are obese prior to its onset. Laughingly this morning I told Dr. Brigham that his recent remarks at the banquet of the Colgate Alumni, assembled to collect sums for the University, were indirectly almost as useful as anything he could do directly for diabetics. Possibly you saw in the morning papers that he advocated penalizing each alumnus five dollars for each inch his girth exceeded thirty inches. The prevention of obesity is a very serious problem for us to consider. The population today cannot die of typhoid fever because there isn't any typhoid. and very few die of tuberculosis. Indeed the children's hospitals show a great decrease in the number of cases of glandular and osseous tuberculosis. Individuals, therefore, must to a large extent develop the diseases of the latter part of life, and one of these is diabetes. We can prevent this to a considerable degree, and it is just as much the duty of physicians to warn their patients against exposing themselves to diabetes as to scarlet fever.

Dr. Brigham's emphasis on routine examinations of the urine I cannot too strongly endorse. It is certainly not overstating the case to say that of the cases of diabetes coming to me scarcely half ever had their urine examined prior to the discovery of their diabetes.

The treatment of diabetes is not so complicated as one may fear. Nurses are a great help. Doctors can use laboratories a great deal, but they can do much without laboratories, and the chart which I have in my hand today has cheered me up as much as any I have seen for a long time. This was of a patient coming here May 1st from the South. He had over four per cent. of sugar. I saw him upon three successive days and then sent him to a nurse in the country, where he stayed two weeks. His blood sugar was 0.40 when he first came to me, but at the end of the two weeks I found it to be 0.180 and the urine sugar free and the diet adequate. If a nurse can do this alone in two weeks, it certainly shows what doctors may accomplish. The whole secret lies in the care and study of the individual case. In this instance all the urinary examinations were made by the nurse.

A word about laboratories. Laboratory work in diabetes must be performed inexpensively in order that all can benefit from it. The only way this can be accomplished is by coöperation. The laboratory data are simple. One does need to know how to do all the tests. One can interpret these very easily with a moderate degree of study, and by means of the knowledge thereby gained great assistance is obtained in the treatment of one's patients.

Dr. William R. Breed, Boston: In connection with the reaction of diabetics to various methods of treatment, there is one point that has not been definitely or accurately brought out,—that is, the total calorie loss sustained by a patient in the process of becoming sugar free and acquiring a tolerance for calories sufficient for his needs. This loss may be called calorie deficit. The daily calorie deficit figure for any patient is obtained as follows:

In the Harris-Benedict prediction tables is found the basal metabolism calorie figure for any patient based upon four factors: sex, age, weight, and height. This figure represents the number of calories burned in 24 hours by any individual person while at rest. It is evident that if sufficient calories are not furnished in the food the body must call upon its own tissues for the remaining number. Moreover, if calories are lost in the urine as sugar, the body tissues must furnish that many more, thus increasing the caloric deficit. For example:

Table I.

H.-B. calorie factor.. 1182
plus
Calories lost in urine 152
1334 = Total calorie deficit
minus
Calories rec'd in food 640
694 = Net calorie deficit

This last figure, "net calorie deficit," represents the approximate number of calories taken in one day from the tissues of a certain patient on a low diet who showed sugar in the urine.

Last winter at the Deaconess Hospital, fifty diabetic patients were fasted directly from the time of entrance until they were completely or nearly sugar free, instead of being prepared for fasting by gradual reduction of diet, as had been, and is now, the routine procedure. This was done in an attempt to discover which method of initial treatment was the more satisfactory from the standpoint of tissue calorie loss. Although the results are not as yet conclusive or fully developed some interesting figures and facts were produced.

Nine cases from the fasting series are here compared with nine cases from the gradual reduction series. No cases of severe acidosis are included in either group. It so happened that each group contains six females and three males. The basis for comparison rests upon two factors, (1) the Harris-Benedict prediction calorie figure, and (2) the acquisition by each patient of tolerance for food furnishing approximately 15 calories per kilogram body weight. That is, the net calorie deficit was calculated daily for each patient until he had acquired a tolerance for food giving him daily approximately 15 calories per kilogram body weight.

TABLE II.

	Fasting			Gradual Reduction		
	H. & B.	Total Net Calorie Deficit	Number of Days	H. & B.	Total Net Calorie Deficit	Number of Days
	1,151	4,620	6	1,179	3,460	5
	1,258	5,041	6	1,022	8,170	13
	1,189	5,928	7	1,292	8,670	11
	1,397	6,311	9	1,077	8,933	11
	1,168	10,003	15	1,182	9,345	9
	1,319	14,325	15	1,320	10,449	15
	1,274	14,919	19	1,674	10,757	12
	1,178	18,150	16	1,480	12,375	19
	1,430	30,472	25	1,342	22,100	21
Aver. Days			13			14
Total Aver. Net Cal. Deficit		12,196			10,473	
Daily Net Deficit		938			748	

938—748=190 calories

The interesting points brought out by this comparison are:

1. The fasting patients averaged only one day less in becoming sugar free and acquiring a tolerance for 15 calories per kilogram body weight
2. Each day during the experiment, the average patient in the fasting series lost 190 calories more than the average patient in the reduction series.
3. The last patient in the reduction series during the 21 days of treatment lost 22,100 calories,—which is a loss equivalent to 16 days complete fasting, *i.e.*,

$$\frac{\text{Total net calorie deficit}}{\text{Harris-Benedict factor}}=\frac{22,100}{1,342}=16+$$

Likewise. the last patient in the fasting series during the 25 days of treatment lost 30,472 calories—which is a loss equivalent to 21 days' complete fasting, *i.e.*,

$$\frac{\text{Total net calorie deficit}}{\text{Harris-Benedict factor}}=\frac{30,402}{1,430}=21+$$

No definite conclusions can, of course, be drawn from this small series of cases, but it is hoped that in the future with more comparisons, a definite opinion on the subject will be tenable.

THE USE OF THE SERUM OF CONVALESCENTS IN THE TREATMENT OF INFLUENZA PNEUMONIA: A SUMMARY OF THE RESULTS IN A SERIES OF ONE HUNDRED AND ONE CASES.

BY GEORGE P. SANBORN, M.D., BOSTON.

THIS series of one hundred and one cases of broncho-pneumonia following epidemic influenza was treated with serum of convalescent patients, during the period between December 1, 1918, and May 1, 1919.

The patients referred for serum treatment were distributed for the most part, in the eastern portion of Massachusetts; a few in New Hampshire and Rhode Island, and one in New York.

The diagnosis in all cases in this series was unmistakably broncho-pneumonia, following epidemic influenza, and in a large proportion the diagnosis had been made and confirmed by a consultant before serum therapy was considered. During the same period, I treated by the same method some cases in which the diagnosis of influenza broncho-pneumonia was suspected, but could not be definitely established. These doubtful cases were not included in the series here reported.

Leucocyte counts were made in nearly all cases prior to serum treatment but I now have record of counts in only thirty. Twenty-seven were below twelve thousand, and three were fourteen thousand, seventeen thousand and thirty-four thousand respectively.

Low leucocyte count was the usual finding, and variations above fifteen or twenty thousand were not very common. The occasional high count suggested complicating infection and required sputum examination and typing, if pneumococci were found: but a high count was not taken to contraindicate convalescent serum, because, irrespective of complications, the important infecting agent was believed to be the same as in the typical cases.

Typing was done whenever a rusty sputum occurred or when the rate of respiration was more rapid early in the pneumonia than would be expected in the typical case. In a considerable number of typings in this series, pneumococci, if found at all, proved to be Type IV.

The importance of typing sputum is shown in a group of cases of probable influenza pneumonia which I treated during the past winter (1919-1920). Type III pneumococcus was found in two cases and Type I in a third. The Type III cases died. The Type I case recovered after three injections of convalescent serum and one of anti-pneumococcus serum.

The majority of the cases of this series were referred for treatment because they were seriously ill and gave the physician concern as to the outcome. The fact that about half of them had been ill from three to seven days when serum treatment was instituted and seventeen died within twenty-four hours, suggests that the serum was put to a severe test.

One hundred fifty-seven doses of serum were administered intravenously to one hundred one patients. The dosage for adults was 100 c.c. and for children 50 c.c. From one to six doses were given each patient according to indications, at eight to twenty-four-hour intervals.

The method of injection was that advocated by Schreiber for intravenous use of salvarsan, using rubber tubing, three-way cock, straight eighteen to twenty-gauge needle and 20 c.c. glass syringe. No discomfort was caused other than that attending the insertion of the needle. In no case was it necessary to cut down on a vein or to inject serum subcutaneously.

The donors of blood, all of them adults, were chiefly private patients, but to some extent were ex-hospital patients who were willing to part with their blood for a consideration.

Those patients only were used as donors who had recovered from an undoubted bronchopneumonia which had followed epidemic influenza. Those giving evidence of having or having had tuberculosis or syphilis were not used as donors. Those who had received convalescent serum as treatment were also made use of and their serum seemed to have satisfactory potency on clinical grounds.

Blood was taken from convalescents as early as three days after the temperature had reached normal and as late as two months after this time. The sera taken during early convalescence seemed more potent than those taken toward the end of the two months' period.

The amount of blood taken at a sitting was from 300 to 500 c.c., and bleeding was repeated once, twice, and occasionally three times at suitable intervals if circumstances would permit. There was never any technical difficulty met in obtaining the desired amount of blood; there was little discomfort occasioned the donor and there were no untoward happenings.

The apparatus used in drawing blood was as follows:

To receive the blood a 500 c.c. wide-mouthed bottle with tight fitting rubber stopper perforated by two glass tubes, one-eighth inch bore, bent at right angles. To one of these tubes or nozzles was connected a thick-walled rubber tube three-thirty-seconds of an inch inside diameter, eight inches long, which had in its free end a male connection carrying a seventeen or eighteen-inch gauge needle of non-corrosive metal. This needle with tube attached, was inserted into a test tube and fixed in place by a tight cotton plug. The other glass nozzle was lightly plugged with cotton. This receiving bottle with needle and tubing attached was wrapped in cloth and sterilized.

To act as a vacuum chamber a second bottle was prepared, similar to the first, but without needle or rubber tubing. When blood was to be drawn the open tube of the sterile receiving bottle was connected by a short rubber tube to one of the glass nozzles of the vacuum bottle and the remaining nozzle of the latter connected by a rubber tube six inches long to the vacuum pump.

Technique. The donor assumed a recumbent position with arm outstretched and resting on a table or chair. The apparatus as shown in Fig-

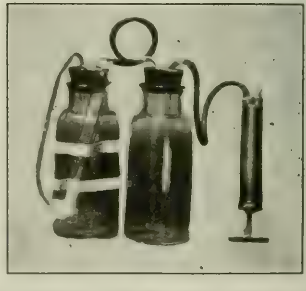

Figure 1.—Apparatus for obtaining blood as used at the Boston City Hospital.

ure 1 was placed in a convenient position close to the arm. After carefully sterilizing the skin at the flexure of the elbow a tourniquet was applied with proper tension. The rubber tube with needle attached was removed from the test tube and the needle inserted into a prominent vein. If properly located within the lumen, blood flowed at once into the bottle. The flow was accelerated by means of the vacuum pump so that clotting in the needle was prevented.

A sufficient amount of blood having been obtained, it was allowed to clot in the bottle at room temperature for several hours. The clot was then separated from the wall of the bottle by shaking, and the bottle placed in the ice chest over night.

The following day serum was pipetted off, centrifugalized to remove red cells, bottled, labelled with the donor's name, and a specimen of the serum taken for the Wassermann test. When serum was urgently needed, the procedure could be cut short and the available serum prepared in from four to six hours.

Serum was pooled as it was required for treatment of a given case. For each 100 c.c. dose, equal parts of as many individual sera as were on hand, were used. Pools usually contained serum from three to five different donors. It was not the rule to add preservative to the serum because it was kept at a low temperature and was used within a day or two and often within a few hours of its preparation. To those sera which were kept more than two or three days, three-tenths of one per cent. of chloroform was added.

The potency of pooled serum seemed to be fairly constant, judged by its apparent clinical effect among cases treated early in the pneumonia.

Of the sixty-seven cases that recovered, fifty-nine required one or two doses; seven, three; and one, six. The maximum dosage of serum in a given case in the recovered group was 700 c.c.

Of thirty-four cases that died, seventeen that received one dose did not live a sufficient length of time to receive a second. The remaining seventeen received two to four doses and two of them received 500 c.c. and 700 c.c., respectively, as the total dosage.

Reactions following serum were conspicuous by their absence. There were no cutaneous eruptions and there was nothing suggestive of anaphylaxis. In not more than ten per cent. of the cases there occurred a chill which was usually slight, not prolonged and not at all prostrating. Chills did not occur after subsequent doses in a given case. Not more than two or three patients complained of serious discomfort accompanying the chill. Nothing occurred in the way of a reaction that could possibly lessen the chances of recovery even in the case of the sickest patient.

About one-half of the cases were seen a second time and this only because more treatment was called for. Through the kindness of the attending physicians I have charts of a fair proportion of the cases and information as to the end results in all of them.

The course of the temperature after injection of convalescent serum is of some interest. Among the recovered cases forty-three received but one dose of serum. Of these I have record of twelve and in eight of these temperature fell to normal within twenty-four hours; in two it fell in thirty-six hours and in two in forty-eight hours. Of sixteen cases receiving two doses I have record of three. One fell to normal in thirty-six hours; one in forty-eight and one in one hundred and twenty hours. Of seven cases receiving three doses each, one temperature came down in forty-eight hours and two in sixty hours.

One case received four doses and is worthy of special note. The temperature dropped gradually during ninety-six hours, condition improved but delirium continued. He was transferred to the McLean Hospital where about a month later he developed a second bronchopneumonia and again became critically ill. Two more injections were given on successive days, temperature fell to normal in forty-eight hours and he recovered.

Among thirty-four cases that died, seventeen died before a second dose of serum could be given. In these seventeen cases no constant effect was noted, either favorable or unfavorable, that could be ascribed to the serum. Among ten who lived to receive two doses, there was a drop in temperature in four, but general condition was not evidently affected. In five cases no change was noted.

One of the cases receiving two doses is of interest because he died several days after his temperature had reached normal and convalescence appeared established. He suddenly developed oedema of the lungs and died in a few hours.

Five cases received three doses; three died in forty-eight hours and there are no records of the other two.

Two received four doses. In one the temperature gradually fell to normal on the fourth day. In spite of this, respiration and pulse remained high and the patient died having had a normal temperature for four days. In a second case treatment was begun on the second day of the pneumonia and 700 c.c. of serum was administered within about forty-eight hours with no effect. Hemolytic streptococcus was found predominating in the sputum.

Beginning between twelve and twenty-four hours after the serum injection among those who recovered, there usually developed a consistent and unmistakable improvement; cyanosis became less marked, toxic symptoms were relieved and a sense of well being appeared gradually to be established. The change from a sick to a convalescent patient seemed to me very clean cut, more so than in the usual non-serum treated case that I have seen, and reminded me somewhat of the effect of diphtheria antitoxin when given in sufficient amount to an appropriate case.

There were practically no complications in recovered cases. One case already described did not recover from his delirium for some weeks and developed a second attack of broncho-pneumonia from which he recovered. A second case developed a Type IV lobar pneumonia after the temperature had been normal about twenty-four hours, but recovered. The percentage of complications was three.

There were nine cases of pregnancy in this series, and two deaths, both following miscarriage. The percentage of mortality was twenty-eight. The reported mortality among pregnant women was high.[7, 8] In one series thirty-four per cent. died and pregnancy was interrupted in thirty-seven per cent. of all cases; in a second group, fifty per cent. mortality; in a third, the mortality when pregnancy was interrupted was eighty per cent. and when uninterrupted, forty-eight per cent. Other groups have been reported with lower mortality rate.

The mortality rate in this series of one hundred one serum treated cases was thirty-three and six-tenths per cent. In one hundred eighty-four cases of influenza-pneumonia not treated by serum, occurring in the practices of six different physicians in this vicinity, during the same period in which this series was treated with serum, the mortality was twenty-one per cent.

TABLE I.

MORTALITY RATES OF INFLUENZA-PNEUMONIA IN THIS VICINITY TREATED IN PRIVATE PRACTICE WITHOUT SERUM, DURING THE PERIOD DECEMBER, 1918, TO MAY, 1919.

PHYSICIAN	NUMBER OF CASES	DIED	MORTALITY PER CENT.
W. C. M.	7	1	14
M. E. C.	16	4	25
M. C. A.	20	5	25
W. E. F.	35	9	25.3
F. R. S.	19	1	5.2
T. J. O'B.	87	19	22
TOTALS	184	39	21

Using this untreated group as controls, it will be seen that the serum treated group has a higher mortality rate by twelve per cent.

The factors contributing to this high mortality rate in the treated cases, as compared with the controls, were several. The serum treated group was composed largely of cases selected for special treatment because they were severe, while the control series were the average cases as they occur in private practice. Seventeen of the thirty-four cases that died were practically moribund when seen and died within twenty-four hours after the serum was given; two died of an early developing complication due to the hemolytic streptococcus; two others died some time after the temperature had reached normal, associated with sudden developing pulmonary oedema. The most important factor which perhaps makes unnecessary the mention of the above is that twenty-eight of the thirty-four who died did not receive serum until after the pneumonia had been under way three to eight days. Influenza pneumonia is extremely rapid in its progress. The average period of life in one group of thirty-nine fatal cases, was four and seven-tenths days.[13]

It is reasonable to suggest, on this basis, that the period during which influenza pneumonia is most amenable to any therapeutic method, does not extend much beyond the first four or five days of the disease, and to assume that the above noted twenty-eight cases first treated by serum on or after the fourth day, did not have a safe margin of time for a serum to bring a broncho-pneumonia to a standstill and to start its reversal. These twenty-eight cases determined the high mortality rate for this series, as is shown in Table II.

The generalization that an antiserum is efficient according as it is given early in a disease and becomes less and less efficient as its administration is delayed from day to day, seems generally accepted. In diphtheria, when serum is administered on the first day of the disease, the mortality should be and generally is, nothing; given on the sixth day, the mortality is nearly three times that on the second.[14] In lobar pneumonia, Type I serum is efficient during the first six or seven days of the disease, and the earlier in this period it is given the more certain the favorable outcome. After this period it rapidly loses its curative value. It is permissible, therefore, to judge the value of an antiserum upon the results among cases treated early in a disease contrasted with the results among those treated first during the later stages.

Table II was prepared to show the mortality rate in this series of one hundred and one cases according to the day of the pneumonia upon which the treatment was begun. No cases are excluded from this table.

TABLE II.

MORTALITY ACCORDING TO THE DAY OF PNEUMONIA UPON WHICH CONVALESCENT SERUM TREATMENT WAS INSTITUTED.

DAY OF PNEUMONIA	NO. OF CASES TREATED	RE-COVERED	DIED	PER CENT. MORTALITY
2nd	20	18	2	10%
3rd	35	31	4	11%
4th	17	11	6	35%
5th	15	4	11	73%
6th	9	3	6	66%
7th	3	0	3	100%
8th	2	0	2	100%
TOTALS	101	67	34	33.6%

As shown in the above table, twenty cases received the first serum injection on the second day of the pneumonia, and ninety per cent. recovered: thirty-five received it on the third day and eighty-nine per cent. recovered: of seventeen treated on the fourth day, sixty-five per cent. recovered: of fifteen on the fifth day, twenty-six per cent. recovered, while of the five cases treated on the seventh and the eighth days, none recovered.

Serum treatment instituted on the second or third day of the pneumonia resulted in mortality of ten and eleven per cent., respectively; instituted on the fourth day, the mortality was three times that on the third; on the fifth day the mortality was seven times that of the second or third day.

The number of cases for each day from the fifth to the eighth was comparatively few, but all cases combined, it amounted to twenty-nine cases with twenty-two deaths and a mortality rate of seventy-five per cent. There were seventy-two cases treated during the first four days of the pneumonia with a mortality rate of sixteen per cent. Thus the mortality rate among the cases treated the last four days of this eight-day period was more than four times the mortality rate among those in which treatment was instituted during the first four days.

In fifty-five cases serum treated on the second and third day of the pneumonia the mortality rate was ten and one-half per cent. The mortality rate of the one hundred eighty-four control cases treated in private practice without serum was twenty-one per cent., or exactly twice as great as that of fifty-five cases treated by serum on the second and third day of the disease.

Analysis of the statistics in this group of cases indicates that the mortality rate increased according as administration of serum was deferred from day to day and suggests that convalescent serum may have had curative value during the first few days of the pneumonia; that its efficiency from then on became rapidly less in proportion as the condition of the patient seen later and later in the disease became more and more serious and rendered him less amenable to treatment of any kind.

MacLachlan and Fetter's series of forty-seven cases was treated by citrated blood, and the mortality rate indicated according to the day upon which treatment was instituted. It was ten per cent. in cases treated on the first day of the pneumonia, twenty per cent. for the third day, and fifty-seven per cent. when treatment was delayed until the fourth day. The curve of increase of mortality rate is broken on the second day by a rise to forty per cent.; the total number of cases is few, particularly on the third and fourth day, and seven cases that died within twelve hours were omitted from the statistics. Nevertheless the difference in the mortality rate of the cases treated early and those treated later is in general consistent with the differences in mortality rate between the cases treated early and those treated late in the disease in the series here reported.

In one hundred fifty-one cases at the Naval Hospital, Chelsea, reported by McGuire and Redden,[2] convalescent serum was administered during the first two and one-half days of the disease (average) and the mortality rate was four per cent.; whereas in Dr. Redden's series of one hundred cases in private practice,[3] treated on the average two to five days later in the pneumonia, the mortality rate was sixteen per cent. or four times that of the early treated group at the Naval Hospital. Thus is suggested the possibilities of serum treatment instituted in the very early stages of pneumonia, as compared to the later stages.

Opinions as to the value of convalescent serum, citrated plasma, or citrated whole blood, in relation to their early administration, are expressed in a number of published articles on the treatment of influenza pneumonia by blood or blood fluids of convalescent cases. They are as follows:

Hartmann and O'Malley:[5] Serum must be given early if a large percentage of recoveries is to be expected.

MacLachlan and Fetter:[4] Citrated blood of convalescent pneumonias has beneficial effect if given early. Beyond the third day it is of little value.

Stoll:[12] Occasionally of value when used as late as the fifth day. Used on the first three days, it seems to lower the mortality rate and to diminish complications.

Bass and Ervin:[10] Of marked value, but early administration important.

Redden:[3] Course of disease shortened. Death rate cut in two in cases chosen for their severity. Death rate reduced three-fourths in large series in hospital practice where cases are seen early.

This expression of opinion based on four hundred and fifty-five treated cases, briefly stated, amounts to this; convalescent serum is of value in proportion as it is given early in pneumonia. This is consistent with the expectations in the case of antisera of established value, and with the finding in the series of cases reported in this paper, based on the mortality rates calculated according to the day of pneumonia on which treatment was initiated, namely, that the time factor, that is the period between the onset and the day of treatment, had a very close relation to the mortality rate, and largely determined the success or failure of convalescent serum.

A correct estimate of the value of convalescent serum is impossible if based on the total mortality rates now available, not only because they vary so widely in different treated groups of cases, but also and chiefly, because there are no stable mortality rates in untreated cases for comparison. No matter how low a mortality rate is achieved (unless it be zero) in a given group of treated cases, a group untreated, with as low a rate is apt to be found.

The statistics of the controlled groups of Hartmann and O'Malley, Ross and Hund, Kahn,[9] Gould,[11] the uncontrolled groups of McGuire and Redden, and the series reported in this paper, would seem to justify a favorable estimate of the value of convalescent serum.

On the other hand, in the carefully controlled series of Locke[15] (twenty-two cases, twenty-two controls) and Lord[16] (twenty-two cases, twenty-five controls), the treated cases have a mortality rate in the one case as great as, in the second greater than that of the controls.

The mortality rates based on the day treatment was begun, in the series reported in this paper, showed that the period of the disease before treatment was instituted had a direct bearing upon the outcome of the case. Consequently correct judgment of value or lack of value of serum in a given group of cases, requires data as to the day of the disease on which serum treatment was instituted in each case. For it cannot be questioned that two groups, one treated and one untreated, seen first late in the disease, would not only have a high mortality rate, but that rate would be about the same for both groups. A small group, even of controlled cases, therefore, is apt to lead one astray, particularly in hospitals where late and serious cases are apt to predominate. A very large series of controlled cases is necessary, particularly in hospital practice, in order to equalize the effect of the severe cases upon the mortality rate.

CONCLUSIONS.

Convalescent serum proved a safe therapeutic agent.

Clinical improvement consistently followed its administration in cases that recovered and in some that died, and gave the impression that it had therapeutic efficiency.

The total mortality rate for this series was not a measure of the value of convalescent serum, but was an index of the severity of the disease in the group as a whole.

Mortality rates calculated according to the day on which serum treatment was instituted in each case, as in Table II, furnished the essentials for an approximate estimate of the value of convalescent serum in this series of cases.

Convalescent serum appeared to have value when it was administered during the first three days of the pneumonia, in this series of cases. This conclusion is based on a mortality rate of ten and one-half per cent. as against twenty-one per cent. in a control series of one hundred eighty-four cases of average severity, occurring in private practice at the same period of the year, in the same general locality, but not treated by serum.

Its value rapidly decreased when administered after the third day of the pneumonia as indicated by rapidly increasing mortality rates, according as administration was delayed from day to day. Given during the first three days, it was three times as efficient as when delayed until the fourth day, and seven times as efficient as it was when deferred until the fifth day. Given during the first four days of the pneumonia it was five times as efficient as it was when given during the succeeding four days.

The time factor, that is the period between onset and day of treatment, had a close relation to the mortality rate and seemed largely to determine success or failure. This corresponds to findings in case of sera of established value.

Total mortality statistics of uncontrolled as well as of small controlled series, because of the obvious effect of cases treated late in the disease upon total mortality rates, are of little value as basis for an accurate estimate of the efficiency of convalescent serum.

Complicating infection by hemolytic streptococci accounted for two deaths in this series. Although the antibody content of convalescent serum is uncertain in character and concentration, the serum undoubtedly would not regularly contain antibodies to the type pneumococci or to the streptococci, which would be specific for the case treated. Since a number of such cases may occur in any series of influenza pneumonia cases, the effect upon the mortality rate would have to be considered.

REFERENCES.

[1] McGuire, L. W., and Redden, W. R.: Treatment of Influenza Pneumonia by the Use of Convalescent Human Serum. Jour. A. M. A., Vol. lxxi, p. 1311, Oct. 19, 1918.

[2] McGuire, L. W., and Redden, W. R.: Treatment of Influenza Pneumonia by the Use of Convalescent Human Serum. Jour A. M. A., Vol. lxxii, p. 709, March 8, 1919.

[3] Redden, W. R.: Treatment of Influenza-Pneumonia by Use of Convalescent Human Serum. Boston Medical and Surgical Journal, Vol. clxxxi, No. 24, p. 688, Dec 11, 1919.

[illegible]

[4] MacLachlan, W. W. G., and Fetter, W. J.: Citrated Blood in Treatment of Pneumonia following Influenza. Jour. A. M. A., Vol. lxxi, p. 2053, Dec. 21, 1918.

[5] O'Malley, J. J., and Hartman, F. W.: Treatment of Influenza-Pneumonia with Plasma of Convalescent Patients. Jour. A. M. A., Vol. lxxii, p. 34, Jan. 4, 1919.

[6] Ross, C. W., and Hund, Ervin J.: Influenza-Pneumonia. Jour. A. M. A., Vol. lxxii, p. 640, March 1, 1919.

[7] Harris, John W.: Influenza Occurring in Pregnant Women. Jour. A. M. A., Vol. lxxii, p. 978, April 5, 1919.

[8] Woolston, W. J., and Conley, D. O.: Epidemic Pneumonia (Spanish Influenza) in Pregnancy. Jour. A. M. A., Vol. lxxi, p. 1898, Dec. 7, 1918.

[9] Kahn, Morris H.: Serum Treatment of Post influenzal Broncho-Pneumonia. Jour. A. M. A., Vol. lxxii, p. 102, Jan 11, 1919.

[10] Bass, J. A., and Ervin, C. E.: Use of Serum in the Treatment of Influenza-Pneumonia. Naval Medical Bulletin No. 71, Division of Sanitation, April 5, 1919.

[11] Gould, E. W.: Treatment of Influenza-Pneumonia by Use of Convalescent Serum. New York Med. Jour., p. 666, April 19, 1919.

[12] Stoll, Henry E.: Value of Convalescent Blood and Serum in Treatment of Influenza-Pneumonia. Jour. A. M. A., Vol. lxxiii, p. 478, Aug. 16, 1919.

[13] Rackemann and Brock: Epidemic of Influenza at Camp Merritt. Arch. of Int. Med., Chicago, 23, May 15, 1919.

[14] Kolmer, J. A.: Infection, Immunity, and Specific Therapy. 1915. W. B. Saunders Co., p. 709.

[15] Locke, E. A.: Discussion of W. R. Redden's paper. Boston Medical and Surgical Journal, Vol. clxxxi, No. 24, p. 691, Dec. 11, 1919.

[16] Lord, F. T.: Discussion of W. R. Redden's Paper. Boston Medical and Surgical Journal, Vol. clxxxi, No. 24, Dec. 11, 1919.

DISCUSSION.

Dr. Lesley H. Spooner, Boston: My experience in the treatment of influenza pneumonia, which Dr. Sanborn has taken up so exhaustively, has not been sufficient to warrant any authoritative addition to the discussion. I wish to express, however, my personal appreciation for Dr. Sanborn's work and for his presentation of the matter.

I feel that it would not be amiss to call your attention to a phase of serum therapy which has been too much neglected, but which ranks only slightly less in importance than the specific treatment of pneumonia of both influenza and lobar types.

During the influenza epidemic at Camp Devens, September and October, 1918, except for the acute fulminative pneumonia—which was classified by pathology and bacteriology as influenzal—a large percentage of fixed types of pneumococci was found in the sputum of those individuals showing signs of pneumonic complications. This observation was corroborated by limited work upon blood cultures, made from blood of the same patients.

From a clinical standpoint it is of especial interest to note that the pneumonia in these individuals was almost entirely of the bronchial type.

Although Cole and others have demonstrated the absolute indication for treating with specific serum the cases of acute lobar pneumonia, presenting Type I organisms, not enough stress has been laid upon the application of this therapy to corresponding cases of bronchopneumonia.

Our work shows that at that period the mortality of all types of pneumococcus infection was at least doubled. As a result evidently of specific therapy the mortality in fifteen cases was reduced to seven per cent.

This compares very favorably with observations of other investigators, since the same mortality was reported from the Rockefeller Hospital by Cole, Dochez and others in cases of acute lobar pneumonia in no way influenced by such factors as influenza.

From these observatons I wish to emphasize the importance of this treatment in bronchopneumonia, the prolonged nature of which renders the disease most dangerous. Lastly I wish to insist that it is the duty of every physician to ascertain the type of infecting organisms at the earliest possible moment, regardless of the variety of pneumonic pathology which is present.

DR. L. W. MCGUIRE, Boston: I was very much interested in Dr. Sanborn's paper as it seems to bear out the treatment which was originated in my service at the Naval Hospital, Chelsea, and in which our chairman, Dr. Van Nüys participated. We treated 170 cases of influenza pneumonia with convalescent human serum. In the first 151 cases we had six deaths, or a mortality of 4%; this percentage continued in the remainder of the series.

Dr. Sanborn points out that the cases treated early in the disease practically all recover. I can surely substantiate that. Our mortality in the cases treated during the first two days of the pneumonia was about one per cent., the mortality rising thereafter. We were favorably situated at the Naval Hospital as we were able to follow most of the cases through their influenza and diagnose the pneumonia complication in its incipiency, and for this reason our results were very favorable. One difficulty we encountered was in diagnosing an influenza pneumonia from a streptococcic pneumonia, as during the latter part of the epidemic an outbreak of primary streptococci pneumonia occurred and the differential diagnosis was at times difficult.

I think the difficulty experienced in carrying out this treatment in some of the hospitals was due to confusing these two diseases. I am sure if convalescent serum had been more generally used, the mortality of the epidemic would have been substantially decreased. In Type I lobar pneumonia, our series reached 30 cases with one death. The results of Type I serum seem to compare favorably with diphtheria antitoxin.

Book Reviews.

Rational Therapy. By OTTO LERCH, A.M., Ph.D., M.D. The Southworth Company. 1919.

Rational Therapy outlines new methods of therapeutic treatment which will be of interest to physicians. The author of this volume believes that the basis of all treatment is the blood and that disease can be most readily cured by purifying the blood and correcting its distribution so that it can be brought to the point where it is most needed. He believes that the blood is nature's healing force—that it contains properties which serve to protect it from infectious disease and bring about recovery and repair of the diseased organs. Dr. Lerch believes that as all the organs make or distribute blood, it only remains to use therapeutic means to influence the circulation, create hyperemia or anemia, as the case may indicate, remove toxins and waste from the blood, and supply it with ingredients in which it is lacking. Various means of accomplishing this are discussed: treatment with the air bath, sun bath, and climate; special attention to the diet of the patient, with consideration of his condition and age, his occupation, his power of assimilating food; the application of exercise and massage, hydrotherapy and electrotherapy; and treatment with hyperemia. The principles of vaccine and serum therapy, organotherapy, and chemotherapy are discussed with reference to the author's conception of rational therapeutic treatment of disease. The book is illustrated by a number of helpful diagrams and plates.

Surgical Aspects of Typhoid and Paratyphoid Fevers. By A. E. WEBB-JOHNSON. London: Henry Frowde, Hodder and Stoughton. 1919.

As our knowledge of typhoid and paratyphoid fevers has been greatly increased during the war, a review of the subject is most welcome. In this volume are considered the surgical aspects of the problem; our present conceptions of these diseases and methods of treatment are commented upon by a man who has had exceptional opportunities for studying a large number of cases. In an historical sketch, from the time of its discovery in 1643 to the present, the author has briefly summarized the observations of such men as Thomas Willis, Sir William Jenner, John Hunter, Sir James Paget, and W. W. Keen. In an introductory chapter are considered the nature and symptoms of typhoid and paratyphoid infections; the results observed in twenty-five hundred cases are recorded in tabular form. Infection of the alimentary tract, the spleen, the liver, biliary passages, and pancreas, the cardiovascular system, the urinary, respiratory, and muscular systems, diagnosis, and treatment. Pathological conditions which have been found in bones as a result of typhoid infection are recorded. One of the most important problems, the carrier problem, is well considered, with especial reference to the importance of the spleen as a primary focus. This book is well written and illustrated, and is a valuable contribution which will be appreciated by the profession.

Manual of Exercises for the Correction of Speech Disorders. By May Kirk Scripture and Eugene Jackson. Philadelphia: F. A. Davis Company. 1919.

The shrill voice and careless speech of the average American has long been recognized, and is probably detrimental to our business as well as to our social life. The *Manual of Exercises for the Correction of Speech Disorders* points out that both normal and abnormal speech should receive far more careful attention than is ordinarily devoted to it. The authors explain speech disorders and methods to be used in the correction of stuttering, lisping, and other results of various organic defects. This is the second of a series of books on speech correction; it is designed for the use of both the teacher and the pupil, and contains material which is the result of many years of experience in private practice and at the Vanderbilt Clinic and at the University and Bellevue Hospital Medical College Clinic. Practical exercises, made up of simple, colloquial English, simple proverbs, poems, and stories, are described and illustrated. The sounds in the English language are explained. Speech mechanism is divided into four constituents: breathing, phonation, articulation, and therapy, with exercises provided for bringing about a proper coördination between them. Perhaps not the least worthy purpose of this book is to build character by teaching the speech defective how to destroy self-consciousness, strengthen his will, take a courageous and determined view of life, and concentrate upon one point at a time. The material set forth in this book will benefit the so-called normal individual, and will be of utmost value in giving to the speech defective the poise, confidence, and ability which he lacks unless properly trained.

General Medicine. The Practical Medicine Series, Vol. I. Edited by Frank Billings, M.S., M.D. Chicago: The Year Book Publishers. 1919.

This volume dealing with general medicine is one of the most valuable of the *Practical Medicine Series,* a series of eight works, issued at about monthly intervals, covering the entire field of medicine and surgery. These volumes give a complete review of the subjects treated for the year prior to this publication; and although the series is published primarily for the general practitioner, it is so arranged that those interested in special fields may secure only the works bearing upon these subjects. This volume considers general aspects of medicine. Infectious diseases,—tuberculosis, cerebrospinal meningitis, mumps, measles, trench fever, malaria, and typhoid fever,—are discussed with regard to pathology, diagnosis, and symptoms, prognosis, and treatment. Of timely interest is the chapter on influenza and pneumonia, in which the epidemics at various army and navy camps are briefly reviewed. The value of bacterial vaccine as a prophylactic against influenza is considered, and statistics quoted which give evidence that no protection was afforded by the vaccine administered at a state institution. Other sections of the book deal with diseases of the chest, bronchi, lungs and pleura, heart and blood-vessels, ductless glands, metabolism, kidneys, gastrointestinal tract, and of the liver and gall-bladder. The material presented in this book, well illustrated by plates and charts, offers to the profession the most recent and reliable observations on subjects of general medical interest.

Malaria and Its Treatment. By Capt. A. Cecil Alport, R.A.M.C., M.B., Ch.B. New York: William Wood and Company. 1919.

Malaria and Its Treatment, in which Captain Alport has recorded the cases, which have come under his observation in the line and at a base hospital, offers to the profession a valuable contribution to the treatment of malaria and its complications. Malarial parasites are described and illustrated by excellent colored plates, and the technique of preparing and staining blood-films is carefully and clearly explained. In discussing prophylaxis, such measures as quinine prophylaxis, mosquito-proof houses and huts, mosquito nets, and various methods of malarial drainage are discussed. The author describes the clinical features of acute malaria and suggests helpful methods of administering quinine and performing lumbar puncture. Cases of cerebral malaria, pernicious malaria, chronic malaria, malarial anemia, and blackwater fever are discussed from the point of view of symptoms and treatment, and are illustrated by laboratory reports. The author emphasizes the importance of remembering the influence which malaria may have on the nervous system, and cites cases of patients suffering from obscure nervous lesions, who had resided previously in malarial countries. In a chapter dealing with concurrent diseases, are important observations on malaria and appendicitis, pneumonia and malaria, and malaria complicated by dysentery. The author is to be commended for having compiled, while on active service, a book so concisely and comprehensively arranged.

The Science and Art of Deep Breathing. By Shozaburo Otabe, M.B., Tokio, M.D., Bâle. New York: William Wood and Company. 1919.

The Science and Art of Deep Breathing has been written by a man who has personally experienced the effects of deep breathing as a prophylactic and therapeutic agent in the treatment of consumption. The author explains as a motive for beginning deep breathing the fact that when a child, he was threatened with tuberculosis. The story of his attempts to strengthen his lungs by practicing deep breathing is convincing, and should encourage others who are apprehensive of their physical condition.

In this volume, comments are made upon the discovery and practice of deep breathing through Brahamanism, and the methods adopted by Brahma, by Buddha, and by Hirata, a famous Japanese scholar, are outlined. The author's own methods are chiefly three: the sitting method, the lying method, the walking and standing methods. He explains that the relation between deep breathing and bodily exercise is often misunderstood, and gives scientific reasons in contradiction of popular fallacies. The salutary effects of deep breathing on the whole body are considered from a scientific standpoint, with discussion particularly of its relation to emphysema of the lungs, to the brain, and the mind. Experiments on animals, although not so successful as might be hoped for, yet indicate clearly that the daily application of deep breathing prevents to a certain extent the tubercular process from developing in the lungs. This record of the author's personal experience, strengthened by experiments on his friends and patients, should interest all who are concerned with the prevention and cure of tuberculosis.

The Mind and Its Disorders. By W. H. B. Stoddart, M.D., F.R.C.P. Third Edition. Philadelphia: P. Blakiston's Son & Co. 1919. pp. 572.

The author "having personally investigated very many patients by the psychoanalytic method and thus been convinced of the truth of Freud's doctrines," has fundamentally changed his attitude toward mental diseases. He states in the preface, "Mental disease can only be understood by studying the psychology of the unconscious mind of patients, and the physical manifestations of a functional nervous disorder must be regarded as secondary, not primary as I taught in the first edition." He still adheres to the interactionist point of view in which "mentation" is considered as a "process" having its physical basis in the brain, but notes (page 2) "For the present we must admit our total ignorance of the physical processes underlying subconscious and unconscious mental phenomena."

The book is divided into three sections, Normal Psychology, The Psychology of the Insane, and Mental Diseases. The chapters on Psychology present an instructive resumé of modern views with additional paragraphs on unconscious mentation, sensations, precepts, associations, emotion and action. The special chapter devoted to psychoanalysis indicates clearly the facts discovered by this method and its technique. In the section on Mental Diseases, there is considerable emphasis on the detail of symptomatology, and the reader is permitted much freedom of choice from many theories as to pathology and treatment. Various modern methods for the treatment of general paralysis of the insane are discussed in some detail.

There is an enlightening chapter on the Insane and the Law with valuable hints as to expert testimony. The concluding portion of the book deals with methods of staining the central nervous system, and the examination of the cerebrospinal fluid.

In consequence of the vast range of material covered in brief compass, this volume falls short of being an authoritative reference of recent advances in mental disorders. As a manual it should have a definite value.

Physical Reconstruction and Orthopedics. By Henry E. Stewart, M.D. Authorized for Publication by the Surgeon General of the U. S. Army. 67 Original Illustrations and 2 Diagrams. New York: Paul B. Hoeber. 1920.

Dr. Stewart states in his preface that it has been his object to present in condensed form the many principles of orthopedics in the treatment of the defects of childhood, war injuries and industrial accidents, laying stress upon the treatment by massage, exercise, and other types of physiotherapy. The book is carried as an aid to the physician, reconstruction officer, physical director and orthopedic assistant.

Part I treats of exercise with special relation to the necessity for physical training in youth and the athletic problems, heart strains and safeguards for boys and girls in athletics. Proper exercises for various ages are outlined. A chapter is devoted to baking, hydrotherapy and electrotherapy. A chapter is devoted to massage and one to vocational therapy.

Part II—Orthopedics: Chapter I is divided into the consideration of congenital defects, infantile paralysis, the diseases and injuries of the spine, curvature of the spine, joint injuries and arthritis, diseases of bones, fracture and dislocation, foot strain and braces and casts. The profuse illustrations make much of the text clearer. The work is essentially a hand book and not a detailed treatise. Some of it is fragmentary while other parts are in valuable detail. It should represent a very fair war experience with much that is applicable to civil life.

The Surgical Clinics of Chicago. Vol. iv, No. 1. 83 Illustrations. Paper Bound Octavo. Philadelphia: W. B. Saunders Co. February, 1920.

This volume contains the following contributions:

Dr. Arthur Bevan: Branchial Cyst; Intestinal Obstructions; Appendix Abscess Simulating Carcinoma of the Ascending Colon; Imperforate Anus, and Gauze Sponge Left in Gall Bladder — Removal After Interval of Eleven Years.

Dr. E. W. Andrews: Chronic Cholecystitis and Cholelithiasis with Positive X-Ray Diagnosis; Two Cases of Myeloma.

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Dr. B. F. Davis: Traumatic Separation of the Upper Femoral Epiphysis.

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Dr. C. M. McKenna: Cysts of the Epididymis and Vas; Hydrocele and Amputation of the Scrotum; Sarcoma of the Bladder.

Dr. C. Culbertson: Ligament Shortening in the Treatment of Retroflexion of Uterus.

Dr. E. L. Cornell: Krönig Cesarean Section.

Dr. R. L. Moodie: Studies in Paleopothology; The Diseases of the Ancient Peruvians, and Some Account of Their Surgical Practices.

The most notable article being the description of Strauss' operation for congenital pyloric stenosis, which seems to be a marked advance over the older Rammestedt procedure.

Shell Shock and Other Neuropsychiatric Problems. By E. E. Southard, M.D. Boston: W. M. Leonard. 1919.

The euphonious and alliterative term "shell-shock" has been recently used in so loose and confusing a manner, that this comprehensive work by Dr. Southard is a valuable and welcome addition to the clarifying of the subject. It will serve to clear up the many important neuropsychiatric problems which have been encountered during the great war and the many angles of approach in nervous and mental diseases which arise in civil practice. This encyclopedic compilation, which appeared only a short time before Dr. Southard's untimely death, clearly illustrates his systematic mind and his ability to handle and classify a mass of heterogenous material.

All the cases reported, five hundred and eighty-nine, are drawn from the European literature, each case being condensed, accurately summarized in its salient points at the beginning, and finally rigidly classified from the standpoint of nature, treatment and diagnosis, so that the reader can judge of the varying clinical pictures which have been loosely and sometimes erroneously termed "shell-shock." Briefly, the classification adopted is as follows: I. Psychoses Incidental in the War (the syphilitic, feeble-minded, epileptic, alcohol-drug-poison, local brain lesion, symptomatic, schizophrenic, manic-depressive, psychoneurotic, and psychopathic groups). II. The Nature and Causes of Shell Shock. III. The Diagnosis of Shell Shock. IV. The Treatment of Shell Shock. This classification is followed by a general discussion of the vast collected material, a discussion whose purpose it is to enquire into the general nature of shell-shock and the mechanism of the war neuroses.

Organic lesions of the peripheral nerves, brain and spinal cord, certain latent psychoses, particularly in the schizophrenic group, which the experiences of war threw into activity, hysteria without somatic trauma, are summarized and discussed in a manner which is bound to be of practical importance in the handling and pathogenesis of these conditions in civilian practice. Those of us who deal with neuropsychiatric problems have frequently seen a latent psychoneurosis or psychosis precipitated by emotional experiences, trauma, or mental conflicts, as they occur in every-day life. The war has merely furnished more clearly defined and severe instances of these conditions, but in both cases, the mechanism remains the same, the clinical picture is identical, although the upsetting factors may be totally different. The attempt of Babinski to dismember hysteria and to raise a purely hysterical reaction to the dignity of a clinical entity under the title of "physiopathic syndrome" will not bear the test of clinical experience, as it deals purely with conscious reactions and not with unconscious motives. In most of the war neuroses it must be clearly borne in mind that the condition arises because reality has become unbearable and therefore, to use a terse psychoanalytic phrase, there results a "flight into disease."

This book is a monument to Dr. Southard's industry and wide range of learning and will remain a work of valuable reference to those who are interested in the broader aspects of neuropsychiatric problems.

Nervous and Mental Diseases. By Archibald Church, M.D., and Frederick Peterson, M.D. Philadelphia and London: W. B. Saunders Co. 1919.

This textbook, which now appears in its ninth edition, is written along the conventional lines of classification of nervous and mental diseases.

The authors state in their preface that "some radical views which have attained considerable popularity have not been incorporated." If the authors mean by "radical views," the newer interpretative studies of the neuroses and phychoses, their conservatism is not well taken, as within the memory of some living physicians, Koch's epoch-making discovery of the tubercle bacillus was at one time considered "radical."

The neurological section, so far as it deals with organic neurology is well done, as it furnishes all that the student or general practitioner needs to know in the diagnostic difficulties of organic nervous diseases. The differential table between cerebral hemorrhage and cerebral thrombosis ought to be familiar to all physicians, so often is the diagnosis incorrectly made. The formulation of rules to guide the physician in his examination of a mental case can be commended, particularly the insistence that the physician must go to the patient as a physician and not under the pretence of being someone else, a device so often suggested by the family or friends.

The portion devoted to psychoanalysis is inadequate. Freud's epoch-making contributions are referred to only briefly and then not accurately, for instance, the title of the fundamental contribution to psychoanalysis, the "Interpretation of Dreams," is given as "Divination of Dreams."

Modern Surgery. By John Chalmers De Costa, M.D., L.L.D., F.A.C.S. Philadelphia: W. B. Saunders Co. 1919.

The eighth, revised, and slightly enlarged edition of this excellent modern handbook of surgery is entirely in keeping with the author's previous editions. It has been improved by a certain amount of rearrangement of sections and sub-headings, a few new and valuable illustrations have been added, and each section has been enlarged to some extent by fuller details of both diagnosis and treatment.

The volume has been brought thoroughly up to date by the addition of the latest literature on war surgery which includes the details of Carrel-Dakin treatment, bone-plating, and grafting and other important steps made in surgery by the war. The number of operations described for various conditions has been increased, a much more complete and recent reference to the literature made in the text, and more space devoted to surgical tuberculosis and to artificial respiration. An excellent and profusely illustrated chapter has been contributed by Chevalier Jackson on Laryngoscopy and Bronchoscopy. The only sections seemingly not up to date are those on cutaneous burns and the use of radium, which remain essentially as in the sixth edition. The book, however, serves as an excellent up-to-date hand book of modern surgery.

War Neuroses and Shell Shock. By Frederick W. Mott, M.D. London: Henry Frowde, Hodder and Stoughton. 1919.

One of the most important problems of reconstruction and the one, perhaps, with which it is most difficult to deal, is the treatment of men still suffering from war neuroses and shell shock. The author of *War Neuroses and Shell Shock* has brought together in this book conclusions based both on his clinical observations and his original anatomical research into the relation existing between shell shock and gas poisoning and the central nervous system. The importance of these observations may be realized upon consideration of the fact that shell shock, neurosis, or psychosis are responsible for one-seventh of the causes of all the soldiers who have been discharged from the army for permanent disability. Colonel Mott has described a great many of these cases, explaining the effects of high explosives on the central nervous system, different forms of shock, the signs and symptoms of commotional shock and severe emotional shock following commotion. His summary of histological and anatomical changes caused by shell shock are enlightening. The author discusses the possibility of CO poisoning as the cause of death in cases where no external injury can be observed, and describes the symptoms, after-effects, and treatment of these cases. Methods are presented for the treatment of war psychoneuroses, of shell shock and neurasthenia, hysterical paralyses, contracture, mutism, and hysterical sensory conditions. The significance of dreams and the importance of occupation and the establishment of an atmosphere of cure are emphasized. The book is illustrated by a number of plates and by excellent photographs showing the condition of patients before and after treatment. To those who may be discouraged by the apparent hopelessness of many cases, this volume brings the encouraging record of successful treatment in a great number of instances during the war.

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MATERNITY AID.

Obstetrics has long been regarded as the tap root of general practice. This would be a proper situation were childbirth always normal. In the year 1918, in Massachusetts, 804 women died as a result of pregnancy or childbirth. The death rate in childbirth has increased steadily from 38 per 10,000 live births in 1901 to 84 in 1918. The proportion of deaths from puerperal septicaemia has more than doubled.

The proof that any such death rate is preventable is shown by the statistics of the Out-Patient Department of the Boston Lying-In Hospital. In the last fifteen years the death rate has averaged 11 per 10,000 births. These patients were cared for in their homes by students supervised by trained obstetric specialists. The good results have largely been accomplished by prenatal care.

In other words the women of Massachusetts stand about eight times as great a chance of death in childbirth if cared for by their physicians or by midwives as do the women in the poorer parts of Boston under the care of careful but inexperienced students properly supervised by experts.

The condition of obstetrics in the State is intolerable. Obstetric practice must be improved. If improvement is not brought about by the medical profession it will be forced upon the physicians by the public. We must recognize that the obstetricians have proved that they can accomplish results so satisfactory that not only in the larger cities but throughout the State obstetric clinics and consultants must be maintained.

The movement for maternity aid in this State was initiated by those who recognized the difficulties of women at the time of childbirth. The movement has been taken up by others who have considered the problem rather from the aspect of public health. Thus various motives have induced our officials and legislators to favor maternity aid in some form or other. Opposition to proposed legislation on the ground that it is socialistic is futile unless some alternative is offered to remedy the present conditions, which would be considered appalling if they had not arisen so insidiously.

The medical profession must set its house in order or the public will undertake to do so, perhaps in ways not the most wise.

The time for a complacent request to be let alone with conditions as they are has gone by. Reform must come in one way or another; no selfish motives can stand in the way of progress.

A very able commission has been appointed by the Governor to consider and report upon maternity aid in November. The President of the Massachusetts Medical Society, who is chairman of the Joint Committee on Legislation of the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, is the chairman of the commission.

The duties imposed upon that commission are arduous and perplexing, but the opportunity to point out the path of progress is unique. It is impossible to bring every individual to the same opinion, but it will be a bitter disappointment if the commission does not present such a clear statement of facts coupled with recommendations so sane as to gain practically the united support of the medical profession. If this is done action by the Legislature is not to be feared.

Meantime the JOURNAL urges consideration of this great problem by all physicians. Let the general practitioner explain the disproportionately large mortality to which we have referred The time is all too short to waste it on resolutions against socialistic tendencies in legislation which have little weight if no alternative measures are suggested. Let the State Department of Public Health give us the best analysis it can of the causes of death. The JOURNAL will welcome frank discussion.

Let us look the facts squarely in the face and seek the best methods whereby we may improve obstetrics. Let us look forward to a recognition of the specialty of obstetrics, with the establishment of obstetric clinics throughout the State.

THE INCREASING NEED FOR FIRST AID TRAINING.

THE American Red Cross sees in the widening disparity between the increase of our population, and the decrease in the number of graduates from medical institutions an added reason for promoting general training in first aid and accident prevention.

The present standard of premedical education has lengthened the time and increased the cost of medical training, thus curtailing to a large extent the yearly attendance at the medical colleges. In 1904, there were 28,142 students attending the various medical colleges of the United States, this being the largest number in any year during the period 1880-1919. The total number of medical students in the schools for the year ending June, 1919, excluding premedical, special and post-graduate students, was 13,052. There was a decrease in 1919 of 578 below that of 1918.

The high standard of efficiency established through the reclassification of medical colleges has caused the closing of many of the smaller and more poorly equipped ones. In 1906 there were 162 medical colleges in the United States; in 1919 there were only 85 recognized medical colleges. In 1903 there were 5,698 graduates from all medical colleges, one graduate for every 14,020 of population. This number has gradually declined in spite of the increase in population, until, in 1919, there were only 2,656 graduates, a decrease of 14 below that of 1918,—one graduate for each 40,230 people.

The longer hours and smaller remuneration of country practice have caused many physicians to move from the rural districts to the larger towns, where conditions are less difficult and remuneration greater. Many practitioners desiring to specialize are attracted to the cities from the rural districts.

That the high standard of medical education must be maintained goes without saying, if we are to render efficient service to those suffering with disease. Nevertheless, the shortage of practitioners has caused increased suffering in certain localities and is very severely felt. Those who reside in the sparsely settled areas are left to the care of untrained assistants and serious illness or loss of life often results. Numerous illnesses and injuries occur which, when improperly treated or if treatment is too long delayed, may prove fatal.

Universal first aid training would supplement the work of the physicians and take from them the burden of caring for unimportant injuries. It would release their services for more serious cases, and would also place the victims of accidents in the physicians' hands in the best possible condition for future recovery.

MEDICAL RELIEF WORK IN THE NEAR EAST.

MEDICAL relief work in the Near East presents many vexatious problems. *The Acorne,* official organ of the Near East Relief in Constantinople, devotes space in each number to a discussion of these difficulties in order that physicians in one district may learn how their problems were solved by relief workers in another. Dr. John W. O'Meara, graduate of Harvard Medical College, wrote in a recent issue of *The Acorne*:

"Judging by those seen in clinic and hospital, I should say that more than half the people in the Caesarea district have roundworms. Santonin, said to be a reliable vermifuge, I have found worthless (using it in doses up to five grains, repeating two and three times). In a dozen instances of abdominal operations, I have seen intestines lined with the parasites, containing thirty to fifty at least, yet when full doses of this vermifuge were given later, and usually repeated, each time the details of a well-recommended routine being carefully observed, not more than three or four worms have been obtained. In the clinic, where therapeutic details have to be left to the patient, results are even more discouraging. I am trying to get hold of a better drug than santonin.

"For favus, the natives here shave the heads and paint on a thick layer of pitch, which is removed in one piece, preferably under anesthesia, in from ten to fifteen days. The idea is to have the hair grow into the pitch and be removed with it. It seems good in theory, but thus far I have not made sufficient experiments with the treatment to judge as to its efficacy."

Near East relief workers say that one of the great handicaps in the medical relief work is the native doctor. He usually refuses to perform operations, leaving it to the barbers as in days of old. Infections of the worst sort result, and nurses with the organization are kept busy caring for the ills developed from "barber operations."

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MEDICAL NOTES.

American Public Health Association Meeting.—The American Public Health Association will meet in San Francisco, September 13-17. Special cars will leave from Boston and New York City on Tuesday, September 7, connecting with a special train leaving Chicago Wednesday, September 8, 10.30 p.m., over the C. & N. W. The program will include the following entries: A Symposium on the Relative Functions of Official and Non-Official Health Organizations; Western Health Problems; Narcotic Control; Food Poisoning; Organization for Child Hygiene; Mental Hygiene; Health Centers. The foregoing subjects and others will be distributed among the following ten sectional groups: General Sessions; Public Health Administration; Laboratory; Vital Statistics; Sociological; Sanitary Engineering; Industrial Hygiene; Food and Drugs; Personal Hygiene; Child Hygiene. Detailed information may be obtained from the office of the Association at Boston.

Blindness in Algeria and Tunisia.—A medical examination conducted on behalf of the American Red Cross in Algeria and Tunisia recently, disclosed the fact that in the oasis towns of the Sahara ten per cent of the native population is blind, whereas in France there are only three blind persons for each thousand inhabitants.

It showed, too, that the present epidemic of trachoma has made its greatest headway among the younger children, both European and native. At Boufarik 27% of the European children and 56% of the native are affected; at Marengo 33% of the Europeans and 57% of the natives. Of 6,025 children examined in different parts of Algeria, 1,650, or 24%, were trachomatose. In the large half European, half native towns along the Mediterranean, 25 persons in each thousand are blind.

Dr. Edmond Sergent, Director of the Pasteur Institute of Algiers, in one small settlement in the department of Oran, found 156 trachomatose cases among a total of 236 inhabitants.

Mortality Among Italian Charcoal Burners.—The universal diet of polenta, and life in the unhealthy marshes surrounding the town, have caused the deaths of thousands of Italian charcoal burners in the district about Citta di Castello within the last few months. Pellagra, malaria, and influenza have caused these deaths, it is stated by Italian and American Red Cross doctors who have been investigating the situation.

The great number of deaths has created an orphan problem which the American Red Cross and the Italian authorities are doing their best to remedy. A colony has been established at Citta di Castello, where the Junior Red Cross is helping to take care of the children.

Award of Degrees by the University of St. Andrews.—The degree of LL.D. has been conferred upon the following men by the University of St. Andrews: Dr. Leon Fredericq, for nearly forty years professor of pathology in the University of Liège, Belgium; Dr. Norman Walker, inspector of anatomy for Scotland and direct representative of the profession in Scotland on the General Medical Council; and Mr. W. J. Matheson, president of the biological laboratory of the Brooklyn Institute and scientific advisor in chemistry to the Board of Health for the city of New York.

American Representatives at the Inter-allied Surgical Conference.—It has been announced that Brigadier-General M. T. Finney, Colonel John B Walker, Lieutenant-Colonel Robert H. Ivy, and Lieutenant Colonel Murray

S. Danforth, Medical Reserve Corps, have been ordered to Paris to attend the meeting of the Interallied Surgical Conference.

Tuberculosis Mortality in Germany.—The following statistics compiled by J. Parisot (*Rev. Méd. de l'Est.*) have been published in a recent issue of the *British Medical Journal*:

> In Germany, and especially in the Rhine provinces, the mortality from tuberculosis before the war was progressively diminishing, and in 1914 did not exceed, and in many cases did not reach, 20 per 10,000 in towns and 15 per 10,000 in country districts. In 1914 the number of deaths from tuberculosis was approximately half of what it was in 1900. On the other hand, the influence of the war on the mortality from tuberculosis was shown by a progressive increase in the death rate, greater and more rapid in the urban than in the rural population. In large towns, such as Mayence and Frankfort, the tuberculosis mortality in 1918-19 was approximately double what it was in 1914. The mortality from tuberculosis diminished in infants of one year and under (a fact explained by the fall in the birth rate), remained stationary in those aged from one to five years, and showed a slight increase from five to fifteen years. The mortality was more than doubled for persons aged from 15 to 30 (327 deaths in 1918 as compared with 144 in 1914 for a population of 400,000), amounted to 534 as compared with 323 in 1914 in those from 30 to 60, and was exactly double (114 as compared with 57) in those above 60. The mortality from tuberculosis was a little higher in men than in women, which is explained by the absence of men on military service, these statistics applying exclusively to the civilian population.

Vital Statistics of England and Wales.—The following statistics of England and Wales have been recorded in the eighty-first annual report of the Registrar General for the year 1918:

> The birth rate in 1918 was 17.7 per 1,000, being the lowest on record. This rate was 0.1 per 1,000 below that recorded in 1917, and 6.1 below that for 1914, which, particularly so far as the birth rate was concerned, might be regarded as the last year unaffected by war conditions. Even this large reduction, however, amounting in all to nearly 26 per cent. in 1918 as compared with 1914, was believed to compare very favorably with the experience of other belligerent countries. The provisional figures for 1919 indicate a recovery, showing an increase of 0.8 per 1,000.
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> The civilian death rate in 1918 was 17.6 per 1,000, being 3.2 above the rate in the preceding year. The increased mortality was due to the epidemic of influenza. Apart from this, the year was one of extraordinary healthiness. The provisional figures for 1919 indicate a fall of about 3.8 per 1,000, notwithstanding the continuance of the epidemic into the early part of the year.
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> Infantile mortality was 97 per 1,000 births, being one per 1,000 above the rate in the preceding year, but 10 per 1,000 below the average of the 10 years, 1908-17. It is one of the four lowest rates hitherto recorded. The provisional figures for 1919 show a rate of 89 per 1,000 births, or two per 1,000 births below that of 1916, which at 91 per 1,000 was the lowest hitherto returned.
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> The estimate of the total civilian population for the whole of England and Wales is given as 13,777,100 civilian males and 19,697,600 females, making a total of 33,474,700 persons. The marriages during the year numbered 287,166, and the marriage rates of 51.9 males and 41.0 for females represented a considerable advance on the low records of the previous year.
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> The births registered during 1918 numbered 662,661, or 5,685 fewer than in the previous year, during which 210,750 fewer births had been registered than in 1914, while the deaths of 611,861 were registered during the same period. Of the deaths, 314,704 were of males and 297,157 of females. The males included 24,032 non-civilians.

Elections to the Association of American Physicians.—It has been announced that the Association of American Physicians has elected as honorary members Sir Clifford Allbut of the University of Cambridge, M. Roux, formerly director of the Pasteur Institute, Paris; Professor Heger of Brussels, and Professor Marchiafava of Rome.

Appointment of Dr. Ferdinand H. Haessler.—Dr. Ferdinand H. Haessler has been appointed resident pathologist in the Department for Nervous and Mental Diseases in the Pennsylvania Hospital at Philadelphia.

The National Anaesthesia Research Society.—The officers of the National Anaesthesia Research Society have been advised of several research workers who will present the results of their experiments and observations at the annual meeting of the Society at Hotel William Penn, Pittsburgh, October 4-8. Prizes aggregating $200 have been offered for the best research papers submitted.

Within 30 days after the challenge of Indianapolis, Toledo replied with 100% enrollment of its recognized anaesthetists, as members of the National Anaesthesia Research Society. The Society, only six months old, already has a membership closely approximating much older institutions, and is already represented in 26 states and Canada.

A correspondent of the N.A.R.S., writing of the conference of anaesthetists held in connection with the Fifth Annual Convention of the Catholic Hospital Association at St. Paul, says it was decided that ether with nitrous oxid-oxygen is the safest anaesthetic. Chloroform was in disfavor because of the large number of casualties from anaesthesia said to result from its use.

The N.A.R.S. has been advised that 14 county societies in California have adopted resolutions within the last few months reading, "That we favor the limitation of the administration of anaesthetics to regularly licensed physicians and surgeons."

In connection with this county movement the N.A.R.S. is advised that the House of Delegates of the California State Medical Association, meeting at Santa Barbara, took formal action:

1. That the administration of an anaesthetic is always the function of a legally qualified medical practitioner.
2. That the administration is best performed by physicians specially trained or who have made a specialty of this subject.
3. That wherever available, hospitals and public institutions, where anaesthetics are administered, employ only physicians as anaesthetists.
4. That this Society condemns, under all circumstances, the training and qualification of lay persons as anaesthetists.
5. That no hospital shall be deemed to have acceptable standings which charges a fee for an anaesthetic unless such anaesthetic has been administered by a legally qualified physician.

Award of the Florence Nightingale Medal.—Six American women, all of whom saw service in the World War, have just been awarded the Florence Nightingale Medal, the highest decoration of the whole nursing world. The distinction, which is bestowed by the International Committee of the Red Cross, Geneva, may be awarded only one nurse of any nation annually:—thus these six women represent America's nursing roll of honor since the outbreak of war in 1914. The terms under which the decoration was created in 1912 also provide that it be granted "only to trained nurses who may have especially distinguished themselves by great and exceptional devotion to the sick and wounded in peace or war."

These nurses, all of whom served with the American Red Cross, are Miss Helen Scott Hay of Washington, D. C., Miss Florence Merriam Johnson of New York City, Miss Martha M. Russell of Boulder, Colorado, Miss Linda K. Meirs of Boston, Miss Alma E. Foerster of Chicago, and Miss Mary E. Gladwin of New York City.

Public Health Lectures Among the Indians.—Not many years ago, when a crowd of Sioux Indians gathered together in an afternoon there was usually a considerable amount of battle, murder, and sudden death among them. Nowadays, however, things are different. When the Sious Indians in Minnesota get together it is to listen to public health lectures delivered in their own language, and frequently by members of their own tribe. There is a great deal of tuberculosis among these Indians, and the American Red Cross is endeavoring by means of lectures to educate them in preventive measures against the disease. One old chief, Two Hawks, is an eloquent lecturer for the Red Cross. A hundred years ago it would have been a brave paleface who would have delivered a lecture to an audience of Sioux. Some such lectures were delivered, but they were usually in the nature of deathbed remarks. Today, however, the Indians look upon these things differently, and are eager to learn all that the Red Cross can teach them.

Anti-Malaria Campaign in South Georgia.—For many years malaria has caused a loss of six million dollars, and, among the negroes alone a loss of over a million and a half working days each year in South Georgia. It infects from 20 to 100 per cent. of the people in the communities, and has caused the death of 800 people annually.

Recently the American Red Cross, in coöperation with the State Board of Health, the Georgia Association, the U. S. Public Health Service, and several large corporations, has undertaken an extensive anti-malaria campaign, moving pictures, lectures and the press all have been utilized in calling the attention of the people to the importance of destroying the mosquito and all its breeding places.

The campaign has already been very successful. Three teams that went out early in April visited more than twenty counties during that month, giving from three to five "shows" in the rural sections. One team reached 4300 people, and the others were similarly successful. The cities were avoided in favor of the rural districts where both the need and the interest were greatest. Hundreds of people drove to the schoolhouses from distances of fifteen to twenty miles.

The report of one of the teams shows that Fort Gaines, Georgia, has agreed to raise $2,500 to stamp out malaria, and will secure the services of a health officer; that Randolph County has applied for a public health nurse and will ask the grand jury to recommend the Ellis health law and the appointment of a public health officer; that Terrell County will employ a sanitary engineer to stamp out malaria; that Thomas County is raising $5,000 to show the outlying districts what can be done; that Colquitt County is asking for a public health nurse; that in Moultrie the Chamber of Commerce will ask the City Council for an appropriation to fight malaria; that in Lee County, Smithville and Leesburg will issue $6,500 in bonds to fight malaria; that in all of these counties and in others the people have been educated and aroused.

Red Cross Emergency Surgical Dressings Parcel.—A standard emergency surgical dressings parcel, to be produced by the Red Cross chapters, and to be kept by them in quantities sufficient to meet readily whatever emergencies each chapter feels may be expected, has been adopted by the American Red Cross. It has been officially endorsed by the Surgeon-General of the Army, the American College of Surgeons, the Surgical Section of the American Medical Association, and the Conference Board of Physicians in Industrial Practice. A manual of instructions for the preparation and production of the parcels has been issued to the chapters, and supplies also will be sent them. The parcel is wrapped in heavy brown paper, sterilized and paraffined, and contains 10 gauze compresses, 1 absorbent pad, 1 rolled wadding bandage, 1 muslin bandage, 1 gauze bandage, 1 triangular bandage and safety pin.

BOSTON AND MASSACHUSETTS.

Berkshire District Medical Society.—Henry James Millard, M.D., a retired Fellow of the Massachusetts Medical Society, aged 84 years, died at his home in North Adams, May 30, 1920.

Dr. Millard, son of the late Stephen C. and Harriet Richmond Millard, was born in Stamford, Vt. He received his early training and education in the schools of his native town. Arriving at manhood, he became fond of travel and taught school in several of the western states. His medical course began at the University of Vermont and was completed at the old Berkshire Medical College, in Pittsfield in 1864. Soon after his graduation, he enlisted in the Union Army and remained till the close of the Civil War, having at the time of his honorable discharge the rank of Assistant Surgeon of the 34th Regimental Massachusetts Volunteers. At the close of the war, Dr. Millard settled in North Adams, where he practised medicine for more than 50 years, during all of which period he was an incessant worker, devoted to his profession and his large clientage. He held honorable office in medical societies, church, city and Grand Army circles. As a member of the Berkshire Medical Society he was particularly devoted, and was greatly beloved by all its members.

As a Society, we, therefore, deem it an honor and privilege to cherish his memory by making entry in the official records of the Society of our late brother's notable career, and by sending a copy to his bereaved family.

Signed,
The Berkshire District Medical Society.
Charles W. Wright,
Vanderpoel Adriance,
Orland J. Brown,
Committee.

Tuberculosis Among Prisoners in Massachusetts.—A report which has been submitted to the State Department of Correction by Dr. William J. Gallivan, director of the Division of Tuberculosis of the State Department of Health, shows that out of 1551 inmates of State and County penal institutions examined for tuberculosis only seven active cases were found. This is the first time that such a comprehensive examination of the prisoners of the Commonwealth has been made, all the institutions having been visited with the exception of the Dedham and Springfield jails. Not one active case was found in the two institutions under direct

State control which were visited,—the State Prison at Charlestown and the Concord Reformatory, which have a combined population of 925. The seven active cases found were distributed as follows: Barnstable, 1; Deer Island, 1; Lawrence, 1; New Bedford, 2; Plymouth, 1; and Worcester, 1. These cases were transferred to the State Hospital at West Rutland.

It is probable that approximately 110,000 people die annually from tuberculosis in the United States, and that 1,100,000 people, or one per cent. of the population, suffer from it pereniall. This percentage is more than double that of the prisoners found with the disease.

Central New England Sanitarium at Rutland.—A bequest of five hundred dollars was made to the Central New England Sanitarium at Rutland in the will of the late Dr. Frank B. Brown.

Animal Health in Massachusetts.—The Animal Division of the State Department of Agriculture has reported an improvement in the health of animals in Massachusetts. Glanders has disappeared almost entirely, tuberculosis is decreasing, hog cholera is well controlled, and anthrax is under successful regulation. Hoof and mouth disease is said to occur only in cases brought in from outside the state.

NEW ENGLAND NOTES.

The Bowdoin Medical School. The Bowdoin Medical School of Portland, Maine, has received notice that the late Frank Byron Brown, M.D., of Boston, of the Class of 1887, has bequeathed to the school one thousand dollars.

The French Orphanage Fund.—The New England Branch of the French Orphanage Fund has acknowledged the total amount of $607,993.62.

Obituary.

IRAH EATON CHASE, M.D.

Dr. Irah Eaton Chase, the oldest Fellow of the Massachusetts Medical Society, died at his home in Haverhill September 24, 1919, at the age of 88. He was a graduate of the Berkshire Medical Institution of Pittsfield in 1852 and of the Jefferson Medical College of Philadelphia the following year. He joined the Massachusetts Medical Society in 1855 and settled in Haverhill, where he practised until he retired in 1897.

Miscellany.

MISBRANDED MEDICINE CASES.

A larger number of seizures and prosecutions on the charge of false and fraudulent labeling of proprietary preparations have been made during the past year than in any other year since the enactment of the Federal Food and Drugs Act, it has been announced in a recent statement by officials of the Bureau of Chemistry, United States Department of Agriculture. The disposition of the actions in the courts is described as follows:

"Sal-Sano" was misbranded, it was alleged by the Government, for the reason that certain statements on the labels of the containers falsely and fraudulently represented it as a cure for diabetes. An analysis of this product showed that it consisted of 3.2 per cent. water, 19.9 per cent. sodium chlorid or common salt, 13.6 per cent. sodium phosphate, 42.2 per cent. sodium bicarbonate and 20 per cent. sodium sulphate, with small quantities of iron, aluminum, and potassium salts present as impurities. The court imposed a fine of $100.

"Indian Wyanoke" was stated by the Government to be falsely and fraudulently represented as a remedy for every form of external or internal congestion, soreness, pain, inflammation, injury or disease, especially of the throat and lungs; acute, chronic, malignant or diphtheritic sore throat, tonsillitis, swollen glands, coughs, catarrh, croup, consumption, pleurisy, and pneumonia. In a booklet accompanying the package the product was represented also as a remedy for whooping cough, lung congestion, lung fever, hay fever, deafness, ringing in the ears, sores in the head, sore eyes, granulations and inflammations of the lids, sore nose, rheumatism, rheumatic headache, muscular disorders, stiff neck, lame back, spinal irritability, numbness, incipient or creeping paralysis, palsy, hives, Cuban itch, salt rheum, eczema, felons, runround, whitlow, boils, carbuncles, eruptions, enteritis, peritonitis, appendicitis, baldness, dandruff and falling hair. An analysis of sample of this article showed that it consisted essentially of chloroform, ammonia, menthol, glycerin, turpentine like oils, alcohol and water. The defendant entered a plea of guilty, and the court imposed a fine of $25 and costs.

In a case of "Gregory's Antiseptic Oil" the Government alleged that certain statements appearing on the label and in a circular falsely and fraudulently represented it as a cure for neuralgia, rheumatism, pneumonia, lung troubles, asthma, coughs, pleurisy, backache, burns, headache, flux, all bowel complaints, sore throat, catarrh of stomach or bowels, consumption, kidney troubles, blind staggers, distemper, glanders, fistula, poll evil, bighead, bigjaw, sweeny, blackleg and hog cholera. This preparation was found on analysis to consist of approximately 89 per cent. kerosene oil, small amounts of oil of cloves, oil of cassia, oil of sassafras and a trace of camphor and pepper resins. The defendant entered a plea of guilty and the court imposed a fine of $50.

"McGraw's Liquid Herbs of Youth" was misbranded, the Government alleged among other things, for the reason that certain statements appearing on the cartons inclosing the bottles falsely and fraudulently represented it to be effective as a cure for all stomach, liver and kidney diseases, and a number of other ailments; as well as to invigorate the nervous system, tone and strengthen the digestive organs, impart a new life and energy to all functions of the body, and to strengthen and build up the system, while it eradicates disease. An analysis of the article showed that it contained essentially Epsom salt, senna, red pepper, quassia, alcohol and water, flavored with methyl salicylate. The defendant entered a plea of guilty and the court imposed a fine of $10.

A shipment of "P P P Prickley Ash, Poke Root, Potassium and Stillingia" was considered by the Government to be misbranded for the reason that certain statements on the cartons and circulars regarding the curative and therapeutic effect of the preparation were false and fraudulent in that the article contained no ingredient or combination of ingredients capable of producing the therapeutic effect claimed for it. No claimant appearing for the property which was seized, judgment of condemnation and forfeiture was entered, and it was ordered by the court that the product should be destroyed by the United States Marshal.

An information was filed by the Government for the interstate shipment of quantities of articles labeled in part "acetanilid tablets," "nitroglycerine tablets," acetyl salicylic acid tablets," "acetphenetidin and salol tablets," and quinine sulphate tablets" which were adulterated and misbranded. Adulteration was charged because the tablets fell below the professed standard and quality under which they were sold. Misbranding was alleged for the reason, among others, that there were false and misleading statements on the labels regarding the ingredients. The defendant company entered a plea of guilty to the information, and the court imposed a fine of $25.

"Kampfmueller's Rheumatic Remedy" was the basis of an action, it being alleged by the Government that certain statements appearing on the labels of the cartons and bottles falsely and fraudulently represented it as a remedy for rheumatism, and as a cure for arthritic rheumatism, articular rheumatism, inflammatory rheumatism, muscular rheumatism, and rheumatic fever. Analysis of a sample of the article by the Bureau of Chemistry showed that it consisted essentially of potassium iodid, extract from a laxative plant drug, alcohol and water. The defendant company entered a plea of guilty, and the court imposed a fine of $25.

Correspondence.

FUTURE OF THE JOURNAL.

Warwick, Mass., July 14, 1920.

Mr. Editor:—

At the regular meeting of the Franklin District Medical Society last evening, Dr. H. G. Stetson, our representative in attendance at the conference to consider the future relationship between the Boston Medical and Surgical Journal and the Massachusetts Medical Society, gave us a review of the proceedings. We understand that there is a desire from those who are to especially consider this question, to get a free expression of opinion from members at large throughout the state. It would seem that the editor-in-chief must be able to devote more time to his work to obtain the best results for the paper and in his assistants' editorship or advisory board there must somehow be secured more responsible coöperation.

How far further financial aid will go to put the Journal on a firm foundation is an open question. The paper must somehow make new history. The writer thought that a privilege might be granted to speak of certain points brought out in our local society's discussion of the subject at Greenfield, through a letter in this way.

The editorial board, for the most part, live in Greater Boston and are specialists and teachers, and it would seem, therefore, that a purely scientific tone might too much pervade a journal when it was depending for its support upon a society, the membership of which are also practitioners in the byways and upon the ordinary highways of the state. At the annual dinner of our Society, Dr. Hugh Cabot, in his discussion of contrasts between Harvard and the University of Michigan, emphasized the responsiveness of a State University to the present needs of every county and hamlet, in practical service. An institution in any sense public must be forever on its guard lest past ideals and ambitions tend to detach it from the service of those who are now taxed, or in any other way assessed, for its support.

The traditions of our Journal are surely worth a bright future and now is the time for getting at the broadest expression of, and considerations as to, a policy that will insure this. The Journal, under its present name would seem as well qualified to serve the medical societies throughout the whole of New England as well as that of our own state. It would also seem, in view of all that has been said, desirable to have a more intimate relationship between the editorial staff and the district societies, small as well as large. It appears to me that this cannot be done by mere correspondence and it would surely be a stimulus, as well as a pleasure, for each of the societies to meet and know men of the editorial staff in a social way. If these men would make such visits, circulating about, the exchange of ideas would be most helpful to all. Cordially,

Paul W. Goldsbury.

PSYCHICAL RESEARCH AND THE PHYSICIAN.

Boston, July 21, 1920.

Mr. Editor:—

In the June 10 number of the Journal, Dr. J. Danforth Taylor essays to speak for the medical profession and dictate very definitely the attitute which should be assumed toward this most interesting subject. His advice may meet the approval of the majority. Be this as it may, the writer feels bound to protest against being included.

To those not familiar with the Proceedings of the Psychical Research Society, which now fill many volumes, it should be said that, besides studying the evidence for survival, the field covered has been most comprehensive, including such subjects as telepathy, visual hallucinations, phantasms of the living, dreams, crystal vision, supernatural perception, automatic writing.

In 1911, W. F. Barrett, F. R. S., Prof. of Experimental Physics, said[*]: "Those of us who took part in the foundation of the Society were convinced that amid much illusion and deception, there exists an important body of facts hitherto unrecognized by science, which, if incontestably established, would be of supreme importance and interest.

"By applying scientific methods to their investigations these obscure phenomena are being gradually rescued from the disorderly mystery of ignorance."

Dr. Taylor's method of dealing with the subject is most unfortunate. To brand as "unreliable" the statements of some of our greatest scientists because their facts do not fit into his opinions is not at all in accord with the scientific method which he lauds so highly. He says, "Mind is looked upon as the functioning power of the brain, but how can a mind or intelligence exist apart from the brain." One might with propriety answer this riddle by asking, "How can a mind or intelligence exist *with* a brain?" We do not know *how*, but we know it does. With equal fairness those who believe in the "persistence of the stream of consciousness after death" are not obliged to answer the *how*.

The late Professor Hyslop[†] says, "It was a mistake of scientific skepticism to invoke any pre-conceived ideas about the explanation of things in order to eliminate the consideration of psychic phenomena. The question of fact, not of explanation, is the first consideration of science. . . . A man should never be required to choose between doubt and belief. He should be able to intermingle both in due proportions. The spirit of openmindedness and impartiality is to the intellectual world what brotherhood is to the ethical world. Woe betide the man who does not see this elementary truth, for he is sure to fall into one dogmatism or the other."

Dr. Taylor's quotation from the late Prof. James about the cumulative effect of continued investigation should be interpreted as evidencing this openmindedness of one who believed "only partially" in survival, but not at all in sympathy with Dr. Taylor's dogmatic statement that, when every possible precaution is taken, "phenomena requiring supranormal explanations are conspicuous by their absence."

Whatever view one may take regarding the evidence for survival, the above statement is not true. "Some of the finest and most acute minds of this generation have concluded that when a critical sifting has done its work there is left a solid block of evidence not capable of any naturalistic explanation."[‡]

Any discussion of this "solid block of evidence" is manifestly out of place here, as our subject is the attitude which the medical profession should assume.

Regarding psycho-therapeutics, Dr. Taylor's advice, "It is his first duty to protect his business, his own peculiar method of specialized industry, by which his intellectual labor obtains its pecuniary rewards," is so bluntly commercial that it should make every conscientious physician blush for shame.

All honor to the broad-minded physicians who are able to relieve mental disturbances by hypnotism, a hypnotic suggestion, re-education and occupational therapy! But one must be dull indeed who fails to recognize that successful suggestive treatment is largely in the hands of non-medical practitioners who seem to make the dose more palatable through the vehicle of all sorts of metaphysical theories. The only valid objection to this irregular practice is that curable diseases are often kept under mental treatment until the curable stage has passed. The precaution taken by the Emmanuel Church healers of requiring a physician's examination before treating the case overcomes this difficulty. The broad-minded physician welcomes any help that will relieve his patient, and in many cases it is difficult to determine the importance of the mental factor. Let us safeguard this irregular psycho-therapy as much as possible, but not denounce it to "protect our business."

In deciding what should be our attitude toward psychical research, one should bear in mind the personnel of the founders of the Society in England in 1882, and the prominence of the scientists who have since carried on its work. The American society was formed in 1884. The first president was Prof. Simon Newcomb, the astronomer, the vice-presidents were Prof. G. Stanley Hall of Clark University, Prof. George S. Fullerton of the University of Pennsylvania, Prof. Edward C. Pickering of Harvard College Observatory, Dr. Henry B. Bowditch and Dr. Charles S. Minot of Harvard Medical School. Dr. Richard Hodgson was its secretary until his death in 1905. Since then until his recent death, Dr. James H. Hyslop, formerly professor of logic at Columbia University, had held the position. He had devoted his entire time and great forensic talent to investigation and critical analysis of psychical phenomena.

The work is financed by endowment and membership fees, and is now established as Section B of the American Institute for Scientific Research.

Since these men felt enough interest in this subject to become the first officers of the Society and to participate in its work, and as many more equally distinguished, including Prof. William James, who served as president, have continued the investigations, Dr Taylor's advice that we physicians arrogate to ourselves the rôle of "defenders of science and opponents of those things which impair the mind" would seem rather bad form. Such "combating" will not elevate the medical profession in the opinion of the Society for Psychical Research, which is, perhaps, quite as important as our opinion of it.

David W Wells.

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[*] Psychical Research, p. 23.

[†] Contact with Other Worlds, p. 4.

[‡] McComb: The Future Life in the Light of Modern Inquiry

THE PARIS MEDICAL SCHOOL OF FORTY YEARS AGO.

Mr. Editor:—

I am pleased to supplement the very interesting reminiscences of Prof. Beverley Robinson of the Paris medical school of fifty years ago by a few memories of my own student days in Paris in the years 1876 to 1879.

Some of the members of the Faculty mentioned in his paper had already joined the silent majority. Trousseau and Behier and Maisonneuve were gone, and Grisolle also.

Gosselin, the rotund and rubicund, was surgeon in Nélaton's service at La Charité, and Hardy was in Trousseau's service in the same hospital.

I started in the old building of the ancient Hotel Dieu in the service of Germain See, fortunately replaced at that period by the young Agregé Grancher. The Chef de Clinique was Debove, mentioned by Prof. Robinson, and later a distinguished member of the Faculty.

Grancher was an excellent bedside instructor but a teasing humorist for the unfortunate student making the examination.

Germain See shone better in the lecture room than as a clinician. I soon migrated to La Charité to the service of one of the very popular members of the faculty, Prof. Hardy. He was joint author with Behier of a text-book on "Medicine Interne." He was one of the best clinical instructors of the period, equally able at the bedside and in the amphitheatre. He did not have the courtly pose or the magnificent diction of Jaccoud, but in practical clinical work he was at his best and his patience with an examining student was worthy of admiration.

Hardy's able Chef de Clinique at that period was Landouzy, destined later to be for many years Dean of the Faculty. The last time I saw Prof. Landouzy he was presiding at an Entente Cordiale medical lecture given in the old amphitheatre at the Faculté by a distinguished English physician. Landouzy was then but the shadow of his early days and I was not surprised to learn of his death a few years later. Gosselin was our surgeon at La Charité but we wandered over to Richet's service at the Hotel Dieu and to Prof. Fournier's service at the St. Louis Hospital. Prof. Fournier was a man of magnificent presence and a thorough gentleman. The last time I met him was on a small steamer plying from Havre to Honfleur. He was accompanied by his son-in-law, Jean Charcot, the explorer. Fournier must have been over 80 at that time. It was saddening to remember him as a debonnaire professor at St. Louis' in the 70's. All of his most interesting skin cases were reproduced in beautiful models by the great artist in that genre, Baretta. The great neurologist of the day, Charcot, had crowded Sunday seances at the Salpêtriére. The audience was not always composed of medical men, as his presentations of cases were almost dramatic and evoked much comment in the daily press.

I think Prof. Marie, of these later days, was then Charcot's Chef de Clinique. The men who were young Agregés and Internes in those days have reached professorships and have themselves passed on. Dieulafoy and Albert Robin were young Agregés, Landouzy and Tarnier, Chefs de Clinique.

The men of today are a later generation. Chauffard was then a student. Prof. Gilbert, now at the Hotel Dieu, I do not remember even as a student.

Sic transit. The years 1876 to 1879 are not so very ancient but the men who occupied the chairs of the Faculty and the Agregés and Internes who battled to succeed to their places have all passed away. The men of that day I remember best were Hardy, Jaccoud, Germain See, Gubler, whose work on therapeutics I assisted in translating, Grancher, Pinard, Tarnier, Bucquoy and Magnan at l'Aisle St. Anne. The surgeons were the venerable Richet at the Hotel Dieu, Verneuil, Gosselin and, among the younger men, Berger. Within the last ten years, it seemed like old times to listen to Dieulafoy and Landouzy and Robin, but at the time of my last visit to the Hotel Dieu and to the amphitheatre of the Faculty in the early spring of 1914 I saw no familiar faces and the medical world I had known in the 70's of the last century had definitively passed away.

M. J. Halloran, M.D. Worcester, Mass.

SPECIAL COMMISSION TO INVESTIGATE MATERNITY BENEFITS.

To the Medical Profession:

The Commission, which is seeking all possible information upon the question of the advisability of state aid to childbearing women and their infants, earnestly asks the coöperation of the medical profession.

All expressions of opinion will be gratefully received. Answers to the following questionnaire are especially requested.

Alfred Worcester, M.D., *Chairman;* Eugene R. Kelley, M.D., Robert W. Kelso, Edward F. Whiting, Helen A. McDonald, Elliot H. Paul, *Secretary,* Merrill E. Champion, M.D., *Director of Investigations.*

QUESTIONNAIRE.

1. Were you engaged in obstetric practice during the year 1919?
2. Would any of your obstetric patients during that year have benefited,—
    (*a*) By more prenatal nursing service? and, if so, how many such.
    (*b*) How many of your patients would have benefited by more nursing service than 'was available during their confinements?
    (*c*) In how many of your cases would the babies have benefited by follow-up visiting nurses' visits?
3. Had you any lying-in hospital facilities available?
4. How many, if any, of your obstetric patients would have benefited had you been able to care for them in a lying-in hospital?
5. Would the consultation services of obstetric specialists, had such been available, have been an advantage in any, and if so, in how many, of your cases?
6. Do you favor any state assistance in providing,—
    (*a*) Lying-in hospitals?
    (*b*) Nursing service, before, during and after confinement?
    (*c*) Expert obstetric consultants?
    (*d*) If your fee was to be paid from public funds in needy cases, would it, in your opinion, tend to influence poor families to call for your services at the proper time and not to delay too long for the best interests of mother and child?
7. Do you favor the granting of state aid to childbearing women?
    (*a*) By direct gratuity to mother?
    (*b*) By payment of physician's fee.
    (*c*) By limitation of gratuities in accordance with the financial status of the family?
    (*d*) By a general health measure free to all inhabitants of the state?

    If opposed to granting such aid, will you kindly state your reasons?
8. Do you believe that, by any action on the part of the Department of Public Health in the distribution of maternity benefits, it would be possible to reduce,
    (*a*) Maternal mortality?
    (*b*) Maternal morbidity?
    (*c*) Infant mortality?
    (*d*) Infant morbidity?
9. Do you believe that such Department of Public Health activities would be helpful or detrimental to the interests and progress of the medical profession?
10. Remarks:

Date: ......Signature ....Address ....

The Boston Medical and Surgical Journal

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Address.

FLORENCE NIGHTINGALE.*

MAY 12, 1820—1920.

BY ALFRED WORCESTER, M.D., WALTHAM, MASS.

IN the summer of 1895 I had the rare privilege of an interview with Miss Nightingale. My English friends in the nursing world had told me that there was no possibility of my seeing her, as she would not see even her dearest and oldest friends and was always averse to calls from strangers, especially men. It seemed indeed hopeless; but I wrote to her that, after studying many hospitals and nursing schools including Kaiserswerth, I was much perplexed amid the varying systems and very desirous of her advice.

She replied with a note of introduction to Miss Crossland, the Home Sister at St. Thomas's, who, she said, would give me all the information I wanted. Of course I obeyed. But afterwards I wrote again saying that I had not yet found the guidance that I believed could be given only by one who knew the whole field. Then she very kindly asked me to call upon her at a certain hour.

You may be sure I was at her door on the minute. But I had difficulty in making my cabby drive past Marble Arch, for, as he complained, his friend the bobby who had stopped us had confided to him that the Queen would soon drive by. He was much disgusted with my insistence that instead of waiting he should drive me to Number 10 South Street. Even had he known that was the home of Florence Nightingale, he still would have thought me crazy in sacrificing a sight of Queen Victoria. And yet who can doubt to which of these two famous women belongs the more enduring fame!

Miss Nightingale was half reclining on her couch in the drawing room. I could not help noticing her beautiful fresh complexion and coloring, her silvery hair, her sweet and low-toned voice. But soon I was entirely occupied in answering her questions about her friends in Germany and America. Only occasionally could I get in my questions, and when tea was served, not till after she said that evidently she had not made it to my liking, could I stop to drink it.

I soon found that she was familiar with the status of nursing in this country. "Why are your pupil nurses given so much theoretical instruction?" she asked, nor was she satisfied with my counter question if ever there is danger in a nurse or any one else knowing too much. She spoke rather bitterly of the mod ern them, of training schools, of the lack of missionary spirit and of the growing commercialism among nurses. In earlier years the new profession of nursing appealed to the most cultured and devout women but it is not so now, she said.

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* An address given in Washington, D. C., at the celebration of the hundredth anniversary of her birth.

To my question which of all the different systems of training was nearest her ideal she named the Metropolitan District Nursing Association, which some few years before she had recommended as the model and basis for the Queen's Jubilee Institute for Nurses, where training in home nursing, rather than in hospital nursing, was the essential feature.

She promised to receive and advise any of our nurses we might send to London. I need not add that this promise was made good, nor shall I attempt to describe the benefits so received.

When finally I insisted upon taking my leave she detained me a few moments to ask God's blessing upon "our work."

Ever since that day I have been able to understand her visitors' inability afterwards to describe their feelings as they came and went. It was indeed

> "As if a door in heaven should be
> Opened and then closed silently."

Were it not for my conviction that every least bit of Florence Nightingale's life and labors ought to be recorded, and that every impression she made upon any of us should be, so far as is possible, shared with others, I would apologize for what may seem an egotistical story. Moreover, my knowledge of her depends not so much upon this one interview, and the few letters she was so kind as to write me, as upon what her friends have told me. Chief among these was her favorite pupil, Miss Pringle, Mrs. Wardroper's successor as Superintendent of the Nightingale School for Nurses, who afterwards for two years was the Matron of our Waltham Hospital. She brought with her several hundred of Miss Nightingale's letters. After her return to England she was the last visitor admitted to see her "beloved chief," and she was the one nurse especially thanked by Sir Edward Cook for her contributions to his admirable biography.

To say that his *Life of Florence Nightingale* is entirely satisfactory to her friends is enough: no higher praise could be given. And for those who read it there is little need of anything else. Unfortunately, the earlier and entirely unauthorized "*Life*," by Sarah A. Tooley, weak and washy as it is, and Strachey's patronizing and coldly brilliant "*Florence Nightingale*" in his recent *Eminent Victorians* will be more commonly read than Sir Edward Cook's two large volumes, which, by the way, might with great public advantage be abridged into a smaller volume. At any rate, for the inspiration of the nursing world there ought to be available an authoritative history of Miss Nightingale's nursing leadership. For although all of her marvelously varied activities were under the same high inspiration of serving God in serving His children, and therefore essentially coherent, it is not easy for those especially interested in the nursing profession to appreciate her leadership in reforming the British Army Medical Service or in the sanitation of India. More difficult still is it except for students of theology and philosophy to follow her profound meditations in those realms.

For common folks it is awesome enough to learn of her helpful friendship to Jowett in his interpretation of Plato, of Cardinal Manning's and Dean Stanley's reliance upon her judgment, and of her powerful influence in the government of India. The details and proofs once given with copious references to bluebooks and to the Letters and Lives of her associates, need not be repeated. The astonished world is now convinced of her versatile preëminence, and Florence Nightingale is already ranked as one of the ablest women of all time.

Today, when we commemorate the centennial anniversary of her birth, I propose to speak only of her leadership in the profession of nursing and more particularly of her influence in this country.

We used to hear of "born nurses." That still means something although now laughed at. Rightly understood, it means in little girls the early awakening of what on earth is most heavenly, motherly love. If ever there was a born nurse, certainly Florence Nightingale was one, and the touching stories of her childhood are not needed to prove it. Fond as she was in her girlhood of music and dancing and of all social allurements, for her heart's real satisfaction she would slip away to some sick cottager's bedside. "Tall and willowy, straight and graceful of figure, with thick brown hair and exquisite complexion, if not beautiful she was of elegant and distinguished appearance."

That is the picture we have of her from those who knew her in her young womanhood.

Her own estimate of herself, as revealed in her diaries and letters of this period, is most humble. Sloth, irregularity, desultoriness, she names as her besetting temptations, from which she was continually praying for deliverance. Her prayers availed! Always intensely religious, intent upon God's service, she sought her own salvation by saving others.

Among her large circle of relatives she was a true Sister of Mercy. But she longed for wider fields. She increasingly felt that only in a life of nursing or other service to the afflicted could her being find its rightful end and scope. And just as clearly she recognized that if ever she were to have opportunity of doing good work in nursing she must first learn her business.

Here we have the keynote of her character and the explanation of her extraordinary usefulness. Her general education, we must remember, had been carried farther than the college standards of today. Proficient in Greek and Latin, perfectly at home also in the French, German and Italian languages, she besides was well up in the natural sciences and in philosophy. She not only had travelled extensively, she also had lived abroad for long periods. During these years she had made visits in several Homes of the Roman Catholic nursing sisterhoods—in Alexandria, Paris, Bruges, Italy—and in Fliedner's Protestant institution at Kaiserswerth. And well she knew the comparative degradation of the nurses in the London hospitals.

Nursing is often spoken of as a new profession. But it is an old art, one of the oldest. As an honorable vocation for women it is coeval with Christianity. Sister Phoebe, whom St. Paul commended to the congregation at Rome, had been a district visiting nurse in the seaport of Athens. The mosque of San Sophia was in earlier ages the church of the deaconess nurses. Revived by the Protestants in the 15th century, and in the 17th century by the great Roman Catholic sisterhoods, nursing again became a distinctively religious vocation.

Deeply religious as she was, and greatly as she admired the Sisters and the Deaconesses, Florence Nightingale never could have been contented in these orders. Nor is there any support for the tradition that she ever thought of joining them. She saw further ahead. For herself, and then for others, she longed for emancipation from social thraldom. Not that nursing in her estimation was ever separable from true religion, for from the first it was with her always a "calling," but in it she saw glorious opportunity for herself and other women.

This generation cannot easily imagine the difficulties she encountered. But the opposition of her family can be understood when we read in one of her letters to her father that the head nurse in one of the London hospitals told her "that in the course of her large experience she had never known a nurse who was not drunken, and that there was immoral conduct practised in the very wards." Some of us who remember the pre-training school days need no such foreign testimony. And for my own profession it is equally easy to remember, and to regret, the opposition of the doctors to having noble-minded women in the wards. Very pleasant is it to be reminded that one of the notable exceptions to give her encouragement was our Dr. Samuel Howe, the teacher of Laura Bridgman.

Not until 1851 did Miss Nightingale gain her family's consent to begin serious training for what for many years she had determined should be her life work. She had spent a fortnight in Kaiserswerth the previous summer. Now she applied to be received there as a regular probationer. Good Pastor Fliedner tried to dissuade her. He was afraid of her delicate hands. "You would not want to scrub that corridor floor," he said. Indeed she would, and she did it well. "And it was a very dirty floor, too," as she herself told me, laughing heartily over the story.

Curiously the same test of earnest purpose was likewise passed by Booker Washington, who after he had been almost refused at Hampton, was allowed to clean a school room. During that night he swept and dusted it over and over again, until in the morning its cleanness fairly shone and he was accepted.

After three months of training in that small hospital Pastor Fliedner held for her the usual consecration service and dismissed her with his blessing. That was all the regular training Florence Nightingale ever had. The hospital and the nursing in it, as she afterwards said, were crude, but the spirit was there and the tone excellent and admirable. Would that the latter could be said of all our modern hospitals with their palatial appointments!

In these days when at least three years are deemed necessary for a nurse's training, the question arises how could so short a course have been considered enough by one who so fully understood the necessity of thorough preparation. The answer is that before she went to Kaiserswerth she was already a model housekeeper: she knew how to modify the home for the comfort of the sick and suffering; she had acquired sufficient knowledge of anatomy and physiology and hygiene: she knew the history of the art of nursing; and she had intently observed the actual practice of the art in her visits to the famous hospitals of Europe. She knew her lack of technical training and that is what she went there for.

In after years she herself occasionally sent out pupils from the Nightingale School of Nursing to the hospital matronships, before they had finished the prescribed course, which there as everywhere else is framed to fit not the excellent but the average probationer.

After Kaiserswerth and before the Crimaea, Miss Nightingale had a year's service as matron of a small private hospital in London and also a short term of service as a volunteer nurse in the Middlesex Hospital during the cholera epidemic.

As often happens in this world, when great leaders are needed they are found at hand. And then it becomes plain that all their previous lives have been just the right preparation for the exalted service they are called upon to render. This cannot be by mere chance. And if ever in the advance of civilization the providence of God is recognizable, surely we have an illustrious example in Florence Nightingale's fitness for her Crimaean service. That she alone was fit for it is shown by the difficulty in finding even a few able to serve as her subordinates. After most diligent search, only 38 nurses could be found in England to go with her, and of these many were afterwards found wholly unworthy.

The story of her going, and of the frightful conditions that confronted her, is too well known to need repetition. An old British General[*] once told me that as he lay on his cot in the hospital at Scutari they could see across the courtyard the ever increasing pile of amputated legs and arms thrown out from the operating room windows. One day, as they saw the ghastly mass being carried off in an army mule cart, the wounded officer next him said, "I believe that English nurse has come." And so she had, that very day. But it was not that pile of rotting flesh, nor the vermin, nor the corpses she found chucked under the beds to make room for incoming patients, much less was it the lack of utensils, of beds, of clothing, or of sufficient food that proved to be her greatest obstacle. That was found rather in the opposition of the surgeons and commissaries, bound up as they were by red tape and army traditions. And yet she triumphed.

Doubtless her influence over brutal officers, and over the common soldiers (from whom in her long experience, as she afterwards testified, she had never heard an offensive word), was partly owing to her charming womanliness which was only enhanced by advancing years. But the real secret of her extraordinary mastery over others is in her own complete self-mastery.

Miss Pringle heard from an eye witness of the scene, how one day as Miss Nightingale was carrying across the courtyard a can of arrowroot an officer rode to meet her and angrily demanded what right she had to touch those stores. She deigned no answer, but, putting down the heavy can, she looked him straight in the eye until he, abashed, turned his horse and rode off. Then she quietly lifted her load and went her way.

Another distinguishing trait of Florence Nightingale's character was her eagerness to learn. She always found out what others knew before venturing to tell them what she knew, which accounts for her continued accumulation of knowledge. Thus during her two years in the Crimaean campaign, as an apt learner from M. Soyer, she became an expert dietitian. And, from the Sanitary Commission, sent out at her request from England, she learned the principles and practice of modern sanitation. But this passion for knowledge was most discriminating. She wanted to learn only what could be utilized in the service of mankind, and that, too, only in her own special line. She never lost sight of, nor did she ever swerve from following, her ideals. This singleness of purpose, and her energy in its execution, largely explains her powerful leadership.

Florence Nightingale herself held that nursing was the least important of the functions into which she had been forced in the Crimaean War. As purveyor, commissary, hospital administrator, sanitary inspector, and instigator of all sorts of reforms, it is true she had gone far beyond the simple nursing superintendence that had been expected of her. In establishing coffee houses, schools, recreation halls, reading rooms, money order and home communication agencies for the soldiers, and, for their wives and other female camp followers, laundries and sewing rooms where they could earn an honest living, she went so far ahead that only in the last great war have we caught up with her.

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[*] Sir Alexander Montgomery Moore.

That the death rate in the Crimaean hospitals fell from 420 to 22 per thousand in her first six months there is of course partly due to the elapse of time since the great battles of Alma, Balaclava and Inkerman, in the autumn of 1854, and also to the advent of spring, as well as to the reforms she instituted. But that does not diminish the credit due her for stopping the needless deaths of thousands. Nor can there be any question of her right to the preëminence as a nurse that the world has accorded to her. The testimony in her favor from the patients she served is overwhelming. How with patients numbered by the thousand, and with four miles of corridors between the beds, she could manage to be present at most of the capital operations and at the death-beds is almost unbelievable. But it is easy to believe that she often was on duty twenty hours on the stretch and that she hardly stopped for snatches of food; neither is it any wonder that she herself nearly died of the Crimaean fever nor that when the soldier patients believed her to be dying they turned their faces to the wall and cried.

Some of the letters sent home by the poor soldiers became famous. Here is one: "What a comfort it was to see her pass even. She would speak to one and nod and smile to as many more; but she could not do it to all, you know. We lay there by hundreds; but we could kiss her shadow as it fell, and lay our heads on the pillow again, content." And still another: "'Before she came, there was cussin' and swearin,' but after that it was holy as a church."

These letters and the following letter from the Commissioner of the *Times* fund were the foundation of Longfellow's "Santa Filomena." "Wherever there is disease in its most dangerous form and the hand of the despoiler distressingly nigh, there is that incomparable woman sure to be seen. Her benignant presence is an influence for good comfort, even amid the struggles of expiring nature. She is a 'ministering angel' without any exaggeration in these hospitals, and, as her slender form glides quietly along each corridor, every poor fellow's face softens with gratitude at the sight of her. When all the medical officers have retired for the night and silence and darkness have settled down upon these miles of prostrate sick, she may be observed alone, with a little lamp in her hand, making her solitary rounds."

Lo! in that house of misery
A lady with a lamp I see
  Pass through the glimmering gloom,
  And flit from room to room.

And slow, as in a dream of bliss,
The speechless sufferer turns to kiss
  Her shadow, as it falls
  Upon the darkening walls.

As if a door in heaven should be
Opened and then closed silently,
  The vision came and went,
  The light shone and was spent.

On England's annals, through the long
Hereafter of her speech and song,
  That light its rays shall cast
  From portals of the past.

A lady with a lamp shall stand
In the great history of the land,
  A noble type of good
  Heroic womanhood.

Great as was Florence Nightingale's immediate service in nursing the sick and wounded soldiers in the Crimaean War, in reforming hospitals and in so saving thousands of lives, her still greater service was for the future, in showing the way to a new and high calling for women, in opening for them a new profession, a new sphere of usefulness. It is for this glorious achievement that she richly deserves her immortal fame.

After her return to England in 1856 she allowed herself only a few weeks' rest. Her invalidism then, as often afterwards, was largely a fiction, a convenient screen that allowed her to shrink from the adoring public and at the same time to continue her great work for the health of the army. Thus, while supposed to be lying on her bed in painful exhaustion, she was visiting the Queen, writing exhaustive reports and forcing the British Government to sanitary reforms.

While so occupied during the four following years she by no means forgot her main purpose of advancing the profession of nursing. Her *Notes on Nursing*, first published in December, 1859, was at once recognized as an epoch maker. The whole world was thrilled by it; nor has it ever been surpassed. Our first American training schools made it their Bible.

Doubtful of her strength for undertaking the management of the "Nightingale Fund," she begged the trustees to do with it whatsoever they pleased; but they wisely insisted that this great tribute from the people, amounting to £44,000, which she had devoted to an "Institution for the training, sustenance and protection of Nurses and Hospital attendants," should be utilized only under her directing influence. Somewhat reluctantly she undertook the task, and the Nightingale School for Nurses was opened at St. Thomas's Hospital, June 24, 1860. This was the first English School for lay nurses, and it has had the greatest influence. But it must not be forgotten that the training of nurses began long before. Fliedner's School at Kaiserswerth was already in its 25th year, and the Gasparins had started their school at La Source in Lausanne the year before. Neither of these schools, it is true, was unsectarian, nor indeed was the Nightingale School, which even a quarter century later dismissed its efficient superintendent when she joined the Roman communion. Moreover, St. Thomas's Hospital was chosen for affiliation because its matron, Mrs. Wardroper, was already an eminent teacher of nursing. And what of Miss Nightingale's own previous service in training the nurses she had in the Crimaea, can there be any question of the worth of their training?

The distinctive advance made by the Nightingale School was due to its independence. From the first its liberal endowment has allowed it to hold fast its educational ideals. And there it has been proved that the best nursing service in a hospital can be given by pupil nurses of a school that has for its main purpose their education, and not the pecuniary advantage of the hospital. No one has ever seen this fact more clearly than Miss Nightingale herself, and the early training schools in this country, which followed her advice, were established on this basis.

That more than ten years elapsed, including the years of our great Civil War, before we in this country began our imitation of the Nightingale School for Nurses is at least partially explained by our estrangement from Great Britain during those years. While Miss Nightingale was in the employ of the War Office in organizing army hospital units for the contemplated invasion of our northern states by way of Canada, it was natural enough that we should not try to withdraw her attention to our domestic problems. Not until the era of good feeling following the arbitration of the Alabama claims did we ask any favors from England. Then we began applying for Miss Nightingale's advice.

Just what was her influence in the establishment of American trained nursing? No complete answer can be given, for her influence, direct and indirect, was world-wide; but never theless there are some definite contributions for which Americans must forever be grateful. There can be no doubt that the school Dr. Susan Dimock started in 1871, which certainly was the earliest training school in America,* was in accordance with what she had learned at Kaiserswerth and from Miss Nightingale. But, owing to the tragic early death of this brilliant young Southerner, there is left only most scanty record of this indebtedness.

The first definitely recorded help given by Miss Nightingale to proposed American schools of nursing can be found in the First Report of the Committee on Hospitals of the New York State Charities Aid Association, dated December 23, 1872. Dr. W. Gill Wylie, a member of this committee, spent three months in England, and on the Continent, studying systems of nursing as practised in the schools and hospitals of those countries. Upon his return he reported in detail upon the school at St. Thomas's. He did not succeed in seeing Miss Nightingale, who at that time was overwhelmed by family affliction, but he brought back from her a wonderful letter that ought never to be forgotten. Here are some extracts from it:

"I wish your Association Godspeed, with all my heart and soul, in their task of reform, and will gladly, if I can, answer any question you may think it worth while to ask.

"You say, 'The greatest difficulty will be to define the instructions, the duties, and the position of the nurses, in distinction from those of medical men,' and you are 'anxious to get my views in relation to this subject.'

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* Miss Linda Richards, the first American nurse to receive a diploma, was graduated from this school at the New England Hospital for Women and Children in September, 1873. For the following year she was Night Superintendent of Nurses in the Bellevue Hospital Training School which, although begun in May, 1873, gave no regular class instruction until the autumn of 1874. Miss Richards had then become the Superintendent of the Training School just started at the Massachusetts General Hospital.

"Is this a difficulty? . . . . Nurses are not 'medical men'! On the contrary, the nurses are there, and solely there, to carry out the orders of the medical and surgical staff, including, of course, the whole practice of cleanliness, fresh air, diet, etc. The whole organization of discipline to which the nurses must be subjected is for the sole purpose of enabling the nurse to carry out, intelligently and faithfully, such orders and such duties as constitute the whole practice of nursing. They are in no sense medical men. Their duties can never clash with the medical duties. Their whole training is to enable them to understand how best to carry out medical and surgical orders, including (as above) the whole art of cleanliness, ventilation, food, etc., etc., and the reason why this is to be done this way and not that way.

And for this very purpose—that is, in order that they may be competent to execute medical directions—to be nurses and not doctors—they must be, for discipline and internal management, entirely under a woman, a trained superintendent, whose whole business is to see that the nursing duties are performed according to this standard. For this purpose may I say:

"1. That the nursing of hospitals, including the carrying out of medical officers' orders, must be done to the satisfaction of the medical officers, whose orders regarding the sick are to be carried out. And we may depend upon it that the highly trained intelligent nurse and cultivated moral woman, will do this better than the ignorant, stupid woman, for ignorance is always headstrong.

"2. That all desired changes, reprimands, etc., etc., in the nursing and for the nurses, should be referred by medical officers to the superintendent.

"That rules which make the matron (superintendent) and nurses responsible to the house surgeons, or medical and surgical staffs, except in the sense of carrying out current medical orders, above insisted on, are always found fatal to nursing discipline.

"That if the medical officers have fault to find, it is bad policy for them to reprimand the nurses themselves. The medical staff must carry all considerable complaints to the matron; the current complaints, as, for instance, if a patient has been neglected, or an order mistaken, to the ward 'sister,' or the head nurse, who must always accompany the medical officer in his visits, receive his orders, and be responsible for their being carried out.

"All considerable complaint against a head nurse, or 'Sister,' to go, of course, to the matron.

"3. All discipline must be, of course, under the matron (superintendent) and ward 'Sisters,' otherwise nursing is impossible.

"And here I should add that, unless there is, so to speak, a hierarchy of women, as thus—

Matron or Superintendent
Sisters or Head Nurses,
Assistant or Night Nurses,
Ward Maids or Scrubbers,

or whatever other grades are, locally, considered more appropriate, discipline becomes impossible.

"In this hierarchy the higher grades ought always to know the duties of the lower better than the lower grade does itself. And so on to the head. Otherwise, how will they be able to train? 'Moral influence' alone will not make a good trainer. . . . ."

After receiving Dr. Wylie's report it was natural that the committee formed to start a training school for nurses in connection with the Bellevue Hospital should accept Miss Nightingale's advice and adopt her rules for nurses as the foundation of the school. New Haven did likewise. And when the Massachusetts General Hospital School was in process of formation the corporation formed for that purpose began by sending for Dr. Wylie's Report. But these great schools, so well begun, in later years surrendered their charters, and also all prospect of further endowments, to the hospitals with which they were connected. Their educational independence was thus sacrificed.

The loss of what ought to have been recognized as the indispensable foundation of schools of nursing as well as of all other schools, has been and still is the main obstacle in the advance of the profession of nursing. And until such independence is regained and the training schools are either properly endowed or supported from the public funds there is small chance for their improvement.

Hospital-owned training schools, which during the last half century in this country have come to be numbered by thousands, have been of enormous advantage to the hospitals, which not only thus have had almost gratuitous nursing service, but also with the incoming of large successive classes of ambitious young women, have had their sorely needed redemption. Fifty years ago some of the nursing in the Bellevue Hospital, for instance, was by drunken prostitutes who in the old notorious Five Points Police Court were given the option of going to prison or to hospital service. No wonder they were often found in drunken sleep under the beds of their dead patients whose liquor they had stolen. Nor need we go back fifty years for equally awful examples. It is not yet twenty years since the matron of a large almshouse hospital complained to me of being obliged, in order to hold her position, to give diplomas to the nurses she discharged for gross immorality.

That such frightful conditions no longer exist in this country is most largely due to the crusade begun by Florence Nightingale. It was she who sent Agnes Jones to the almshouse infirmary of Liverpool, "Una among the Lions," where was demonstrated the power of noble womanhood over vice enthroned. Nor was it only in selecting the right nurses to send to the different outposts that she was the incomparable leader of the crusade, for she afterwards kept in closest touch with them, ever ready to hear of their battles, to sympathize with their hardships and to glory in their triumphs. She well deserved to be called by them their "beloved chief."

This mighty work of hospital redemption, now so nearly accomplished in all civilized countries, so appealed to chivalrous women that there seemed no end to the stream of incoming probationers. That the great leader herself was so noble, so cultured and so richly endowed was not without effect in winning the assent of fond parents for their daughters' enlistment. Moreover, the new profession that was thus opened was at first almost the only pathway by which ambitious young women could win their independence. The educational and pecuniary inducements in the early years were also not so comparatively small as now.

And yet a quarter century ago Miss Nightingale was lamenting that, whereas at first only noblest motives impelled women of the rarest character to enter the training schools, by that time far less worthy motives were predominant in the crowds of applying probationers. She was puzzled by this as well as saddened.

In the later development of the nursing profession, it must be regretfully acknowledged, Florence Nightingale's leadership was largely lost. Her old pupils of course were her faithful followers to the last. And also many in this country, who had had only the inspiration that came from brief visits and from her occasional messages never swerved in their allegiance. But the thousands who knew her not have followed other leaders. Such perhaps is the inevitable fate of those who so long outlive their own generation.

It could hardly have been expected that one always so determined would in her old age be easily converted to the opinions of others. But it is pitiful that Miss Nightingale, after her long years of undisputed leadership in the nursing world should not have been saved from the bitter contest that arose in England over the proposed registration of nurses. She could not have taken much comfort in her success in blocking that movement, for it resulted in the division of British nurses into two hostile camps. Just as the modern architects ridiculed her fixed ideas regarding hospital architecture, so many of the modern nurses did not hesitate to call her a back number. That, in the opinion of her friends, was not much worse than the condescending tolerance of her opinions in this country.

Had Miss Nightingale and her disciples accepted the fact that, in the evolution of nursing, the training schools were being swallowed by the hospitals, they perhaps would not have clung so persistently to their preference for the continued watchfulness over nurses by the schools from which they were graduated. For, when the education of their pupils for subsequent service was at best only a secondary object of such schools, it could not be expected either that they would look after their graduates or, if they did, that the nurses themselves would relish such guardianship.

The fact is that this beautiful feature of the deaconess schools and of the Catholic Homes, both Roman and Anglican, in which Miss Nightingale herself was trained, belongs to the past. The same separation that nearly a thousand years ago occurred between the clerical and the medical professions has in these later years come between the professedly religious and the unsectarian lay schools of nursing.

Chapels and chaplains, for the inspiration and consecration of pupil nurses to the service of God in serving his afflicted children, are no longer considered necessary. Mother Houses to which worn out nurses can return are not even thought of by modern schools.

In this radical departure of the training schools from Miss Nightingale's ideals, as exemplified in the School at St. Thomas's, there may have been some gain. There certainly has been distinct loss. The hospital ownership of the training schools is the main cause of the graduates' lack of interest in the welfare of their schools. Loyalty to their hospital is a poor substitute for devotion to their Alma Mater.

So long as the hospital training schools had only to pick their probationers from long waiting lists of applicants little attention was paid to the drift of the schools away from educational ideals. The immediate usefulness of the pupil nurses was the paramount consideration: their fitness for subsequent service was a secondary matter. Few appreciated the significance of the fact that practically none of the thousands of yearly graduates from the colleges were coming to the training schools. But now, when throughout the country there is such a serious shortage of applicants, and when graduate nurses are advising their younger sisters not to follow in their footsteps, the question is being anxiously asked what can be done to make the training schools more attractive.

Professional as well as personal dissatisfaction with present conditions is a hopeful sign. Searching examination into the causes of failure naturally follows. And, although real advance is not obtainable by attempts to repeat past conditions, much help can be found in the rediscovery of the guiding principles of previous successful leadership.

Centennial commemorations of great leaders may thus be very useful. And, in this somewhat discouraging era for those who long for renewed advance in the profession of nursing, there is great hope in the present revival of interest in the lifework of Florence Nightingale.

Original Articles.

MUSCLES AND LIGAMENTS OF LUMBAR AND PELVIC REGIONS: THEIR MECHANICAL ARRANGEMENT AND THE TREATMENT OF THEIR WEAKNESSES

By Herman W. Marshall, M.D., Boston.

Flat foot refers to an anatomic defect of feet. Heights of arches were measured in the past and peculiarities of foot shapes and variations of bones of the feet were noted. Disturbances of muscle balance were investigated, and the term foot strain was introduced. Then many patients were found with flat feet who were stronger than others with high arches.

Finally, as the knowledge of foot troubles increased there was brought into more and more prominence the peculiarities of muscles and ligaments and their mechanical arrangement. Especially their variations in strength from time to time have become recognized as determining factors in onsets and cessations of painful foot symptoms. They are the structures that have to be treated first in the vast majority of instances in relief of foot strains; and, with their increase in prominence there has been a division of the significance formerly attributed to anatomic peculiarities; also there are fewer diagnoses made now of neuritis or rheumatism of the feet.

Careful comparisons of facts and of circumstances attending gradual complete elucidation of foot strains can be made profitably in the study of low back strains, it seems to the writer, as understandings and treatments for the latter are launched apparently on a similar course.

In this paper, therefore, instead of trying to extend our knowledge of rare or common anomalies of vertebrae, or measuring precise degrees of lumbar curves, or going into theories of pressures and pulls on nerve trunks, all of these topics will be ignored to as great an extent as possible in an attempt to explain back symptoms on the basis of mechanical arrangement and variable strengths from time to time of muscles and ligaments of the back.

Muscle masses of the gluteal region and of the erector spinae group with their attachments to the pelvis will be considered; also important sacrosciatic, dorsal sacroiliac, ileolumbar and anterior spinal ligaments.

Figure 1 is a rough diagram that illustrates the following points: Body weight is transmitted to the pelvis along the line L to the upper surface of the sacrum. The latter does not give way because it is slung up to overhanging iliac bones on each side by exceedingly strong dorsal sacroiliac ligaments at A. Assistance is rendered to some degree by ileolumbar ligaments at B. These two opposed forces, one exerted downward at L, and resisted by the other in direction along the line NA toward A, tend to rotate the sacrum. Any point at M will tend

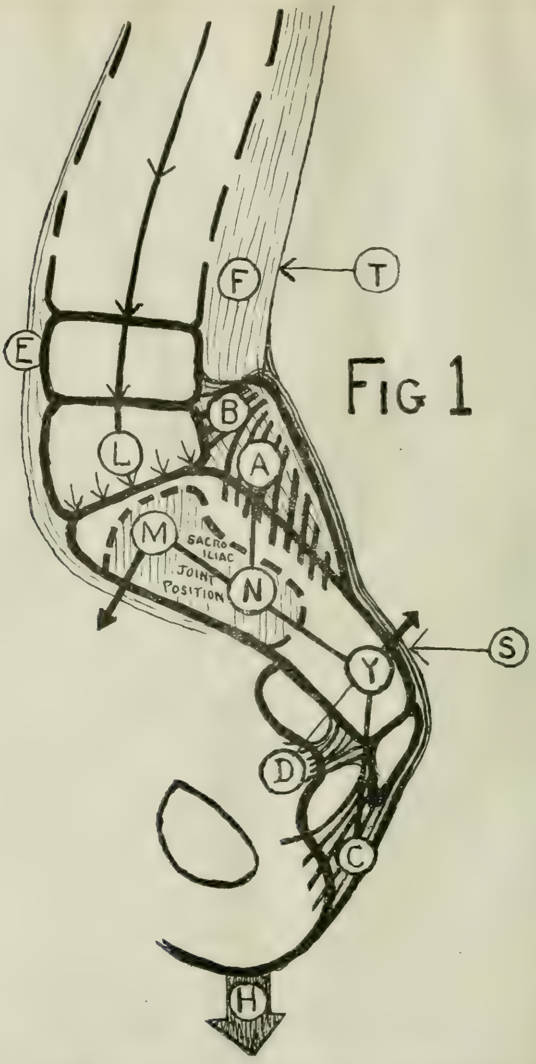

FIG 1

to rotate downward in direction of the arrow at M. Any point at Y will tend to rotate upward in direction of the arrow at Y. There will be a fixed point somewhere at N on which the sacrum rotates as on an axis. Under normal conditions no rotation occurs, however, because strong sacrosciatic ligaments hold down the lower part of the sacrum by forces exerted along lines YC and YD. The anterior spinal ligament at E helps to prevent downward sagging of the upper end at M.

Figure 2 shows dorsal sacroiliac ligaments at 2 and indicates their additional action of binding the sacrum to both iliac bones laterally, maintaining rigidity of the pelvis as well as counteracting the downward thrust of the vertebral column. The greater and lesser sacrosciatic ligaments at 1 and 4 keep the sacrum

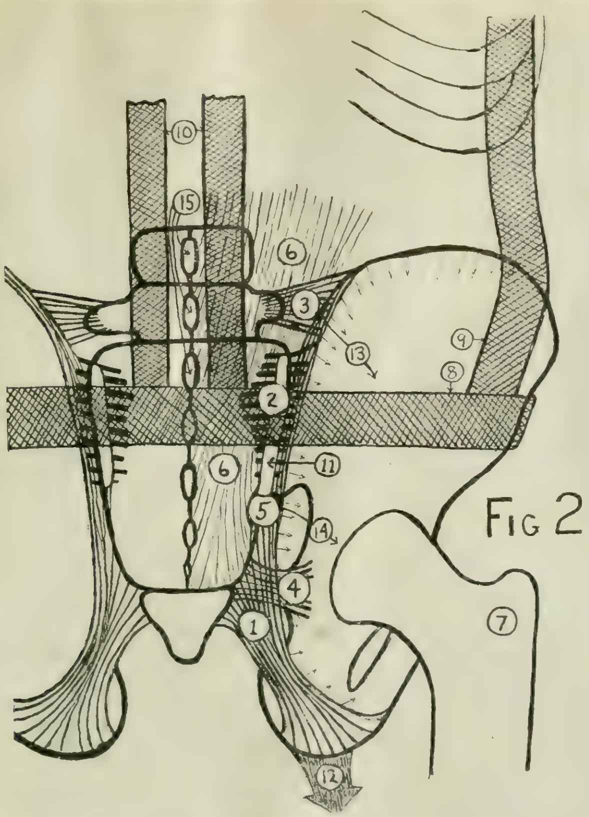

Fig 2

from being displaced laterally with respect to lower parts of innominate bones. They bind the pelvis together firmly at its lower limits. Ileolumbar ligaments at upper limits of innominate bones at 3 help to anchor the base of the flexible lumbar spine to the rigid pelvis, and together with the fifth lumbar vertebra they bridge the pelvis to form its uppermost reinforcements.

As long as these various ligaments retain their normal strengths anatomic anomalies possess no significance, and when ligaments weaken or stretch it is impossible generally to tell whether any existent bony peculiarities as shown in x-rays should be considered advantageous or disadvantageous elements. Regardless of whether there are unusually large, average, or subnormal developments of any bony processes, there will be onset of pathological symptoms, provided ligaments weaken or stretch sufficiently rapidly.

Emphasis cannot be laid too strongly on the fact that sacrosciatic, dorsal sacroiliac and ileolumbar ligaments possess two important functions, namely, of holding the pelvis together and of preventing rotation of the sacrum in a longitudinal plane, as later it will be seen that pelvic belts and transverse straps do not reinforce weakened ligaments perfectly, and that rotary tendencies of the sacrum are particularly difficult to control.

Gluteal muscles act between pelvis and femur in directions indicated at 13 and 14, while erector spinae muscles pull upward, as seen at 6, in a longitudinal direction. Their attachments to the pelvis often become strained and irritated in a manner similar to that shown at insertions of plantar fasciae into the feet

At lower limits of sacroiliac joints at 5 there are found points of localized tenderness frequently where sacrosciatic ligaments and gluteal insertions both are present, so that it is impossible in this region from location alone to differentiate between sacroiliac joint inflammation, sacrosciatic strain or irritation of gluteal muscle insertions. Similar confusion exists over interpretations of local tenderness at 2 and 3, where there are deeply placed ligaments; also insertions of erector spinae muscles into these ligaments and into the dorsal surface of the sacrum.

Movements of the spine from muscular action shift strains on ligaments in variable manner. The most comfortable position for some patients is a standing posture with delicately balanced poise, and they are uncomfortable when lying down or sitting. Other patients find it impossible to stand erect, and many have lateral lists to the trunk as well as a forward inclination.

It is difficult to explain easily all variations of posture, and reasons for possibilities and limitations of back motions in individual cases, because so much depends on precise directions in which strains were sustained, as well as their degrees. Also because in addition to simple strains borne at times of injuries there are many slight bony displacements which maintain abnormal ligamentous tensions afterwards, although such displacements usually are too slight to be recognized from inspections.

Fortified with precise details of onsets of symptoms, with knowledge of exact ranges of different back motions in each individual case, with definite ideas regarding locations and significance of all tender spots in the back, and with understanding of the mechanical arrangement of the musculo-ligamentous forces that are acting, it becomes possible to identify strains and to prescribe braces most effectively.

The simplest form of support is an adhesive strap applied transversely across the back of the pelvis in a manner to reinforce transverse dorsal sacroiliac ligaments. A webbing belt encircling the pelvis may be employed to perform the same service. If it is narrow, it will be less effective in binding iliac bones and sacrum together than if it is wide enough to include upper and lower limits of the innominate bones so as to exert an even encircling pressure above and below as well as at the middle of the sacrum.

In Figure 2 the pelvic band of a back brace is represented at 8 crossing sacroiliac joints at 2, and it will be seen that a thin flexible steel hoop applied tightly around the body at this point will reinforce more or less all ligaments at 2, 3, 1, 4, in their pelvic actions. The tilting pull at 1 and 4, as well as the downward thrust at 2 and 3, represented more clearly in Figure 1 at C, D, A, and B, will be combated by transversely applied belts, however, only through the increased friction they produce between opposed surfaces of sacroiliac joints. This friction probably is not very effective, when ligaments are relaxed, and what is needed to combat rotation of the sacrum successfully is an additional appliance, or appliances, which reinforce longitudinally acting ligaments and muscles.

The pelvic band at 2 will have no influence upon the upward pull of lumbar muscles on their pelvic insertions, nor upon the downward pull of gluteal muscles toward the femur in directions indicated at 14, 11, and 13. It will not support the longitudinal fibers of the great sacrosciatic ligament when they become weakened at times like all other ligaments. Longitudinally or obliquely acting forces which tend to rotate the sacrum, or to bend thighs and trunk on the pelvis, can be influenced, nevertheless, by appliances which extend above and below the pelvis.

A plaster cast enclosing trunk, pelvis, and affected leg will accomplish the purpose in part, but it will make the individual very helpless. By putting a patient to bed and exerting a longitudinal pull on the leg with extension apparatus, it is possible to reverse the direction of forces acting on the superior surface of the sacrum at L, and simultaneously relieve sagging downward pulls on ligaments at A and B. But the securing of reasonable degrees of activity for patients, avoiding recumbency and casts, while supporting at the same time their weakened longitudinally acting muscles and ligaments sufficiently, is the problem the solution of which is most urgently needed.

Below the pelvis sacrosciatic ligaments and gluteal muscles can be reinforced by adhesive straps applied along their courses, extending upward over sacroiliac and lumbar regions and downward over gluteal and hamstring muscles on the thigh; but this procedure greatly limits leg motions and moreover inelastic straps

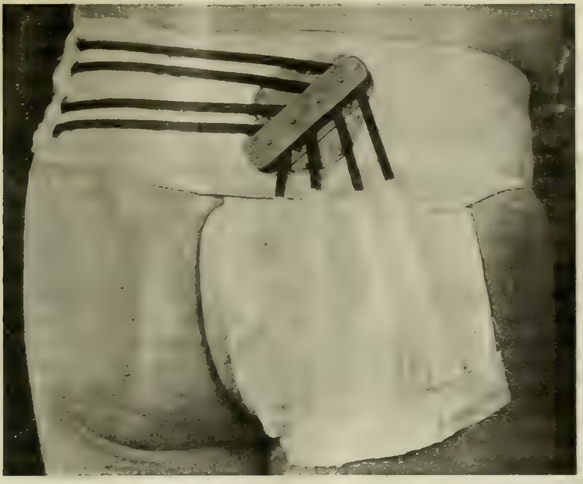

Fig. 3

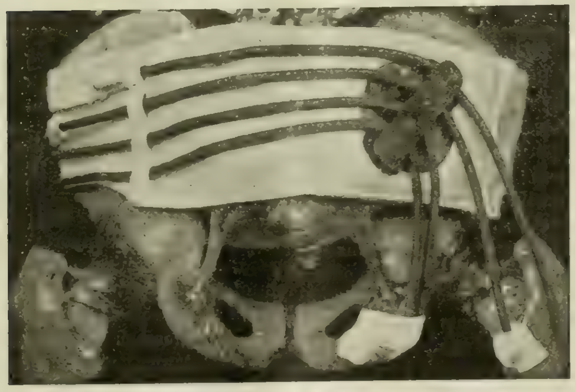

Fig. 3A

pull unbearably hard on the skin in stooping. The difficulty can be solved, however, with some measure of success for moderate strains by the device figured in Figure 3.

Adhesive straps are applied to the affected buttock and thigh so that an extensive adhesive patch is firmly attached and from which a series of rubber cords of suitable size and strength are continued upward to the pelvis in direction of sacrosciatic ligament and gluteal muscle fibers. The rubber cords are passed around pulleys incorporated in an ordinary pelvic belt at the sacroiliac region. The cords pass forward from the pulleys in a horizontal direction on the webbing to buckles in front where they are fastened after adjustments. This arrangement permits any patient to exert a comfortable continuous reinforcing pull directly in line of weakened sacrosciatic ligaments and muscles by simply tightening the cords at the front of the belt. If there are any slippings of the belt, readjustments can be made easily; and bending of the body at the hips is permitted because the long elastic cords stretch readily without increasing tension on the skin at the adhesive patch to an uncomfortable degree, yet they maintain a very considerable continuous pull sufficient to relieve mild muscle or ligament strain.

Figure 3A shows the same pelvic belt as in Figure 3 strapped around bones of a pelvis. It illustrates convincingly the directions of forces pulling on sacrosciatic ligaments, on encircling belt and on elastic cords.

Above the pelvis the large majority of back strains involve back muscles without including to serious degrees the integrity of important dorsal sacroiliac ligaments or anterior ligamentous supports of the spine. These back strains correspond to mild or acute cases of foot strain of short duration and slight foot deformity. Steel braces, corsets, strappings, massage and exercises are common methods of treatment.

A common type of brace consists of two flexible steel uprights applied along the spine, attached below to a horizontal pelvic band, and terminating above in two shoulder straps. Spinal movements in forward flexion, lateral and twisting directions are restricted enough, and back muscles are supported sufficiently to relieve an average mild or moderate muscle strain of the back. Restrictions of shoulder motions is a disadvantage which may be avoided by use of four flexible steel uprights, two posterior and two lateral ones, all of which do not extend quite up to the axillae. Anterior chest and pelvic straps fasten the light, comfortable steel cradle to the lower part of the trunk, and it restricts motions of the lumbar spine sufficiently to relieve moderate low back strains and to allow subsidence of irritation at muscle attachments at lumbo-sacral junctures, yet it permits complete freedom of shoulders.

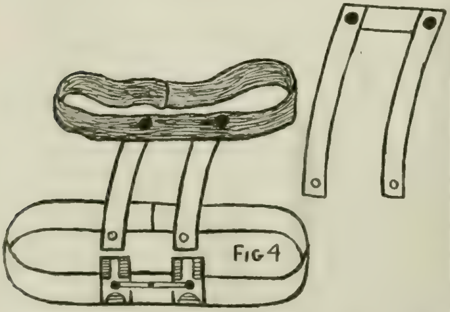

FIG 4

Figure 4 represents a simpler type of support used in connection with corsets for mild muscle strain without sharply localized points of tenderness and without much irritation of muscle attachments laterally at lumbosacral junctures or posterior superior iliac spines. Sets of detachable upright steels of graduated degrees of stiffness and different lengths are provided for the shifting needs of these very mild chronic cases. Anteroposterior curves of upright steels are made greater than lumbar curves of patients, as the latter stand in natural erect, evenly balanced postures. When in use the steel uprights press forward upon the lumbar spine in a manner which patients recognize as comfortable pressures in their hollow lumbar regions. Relief is not the result of direct pressure though, but of the counter pull upon upper ends of the uprights as the body is supported partly by anterior chest bands on which patients unconsciously lean. Thus the elastic steel back springs take a part of the weight that otherwise would be borne entirely by relaxed, slightly weakened erector spinae muscles. In consequence, there is a partial relief of tension on these back muscles which patients naturally, yet erroneously, attribute to the direct gentle force felt upon the lumbar spine.

Stiffer sets of uprights are replaced by more flexible ones and all are dispensed with gradually as soon as the muscles have become sufficiently rested.

These adjustable supports, if used correctly, possess distinct advantages over usual types of reinforced corsets with attached pelvic belts, because such corsets generally are worn too long. Symptoms may subside with use of corsets, but a lower level of muscular equilibrium is struck as long as artificial supports are continued. The principle is a wrong one which incorporates into articles of usual wearing apparel features that should be temporary and that should be replaced by other features of exactly opposite physiological effects soon, namely, increased muscular exercises. Employment of reinforced corsets resembles use of shoes with permanently incorporated arch supports, and the latter have been found generally to possess more disadvantages than merits.

Forward pressures, theoretically, are disadvantageous if important weaknesses of anterior spinal supports in the lumbar region exist, but practically in the mild types of lumbar *muscle* strain relief only is noticed and spinal *liga-*

ments are adequate to hold all usual strains put upon them plus the slight additional forward pressures from back braces.

Extreme antero-posterior lumbar curves are comparable to excessive degrees of foot deformities with considerable stretching of ligaments of the feet. Both indicate that such patients have experienced severe grades of musculo-ligamentous weakness at some time in the remote or immediate past; but neither show conclusively existing strengths of back or feet, for hypertrophy of muscles and ligaments follows subsidence of symptoms very frequently if patients enjoy good health afterwards, and old anatomic deformities may have been compensated for entirely satisfactorily. Both should be corrected as soon as possible, however, if they show severe grades of structural changes associated with continuous pains and functional weakness, but corrections of stabilized lumbar curves have little more merit than upsetting the balance of strong symptomless flat feet.

A deformed foot can be forcibly manipulated and held in corrected position in a plaster cast, then subsequently supported with a foot plate, and finally exercised again into a normal muscle balance. A hollow back likewise can be held in a position of lessened anteroposterior curve with a plaster cast. Recumbency will rest weakened dorsal sacroiliac and anterior spinal ligaments which are responsible for sagging forward of the vertebral column with downward tilting of the sacrum. Exercises can be used subsequently to assist in maintenance of improved posture thus temporarily gained.

The practical question arises whether prolonged irksome treatments needed to lessen lumbar curves and stabilize them in their corrected positions are worth their cost, when one considers the risks of recurrences and excellent efficiencies of some very hollow backs. It would seem that prolonged recumbency treatment in jackets might be restricted profitably to prolonged very extreme cases of back deformities.

Some orthopedic surgeons, however, treat back strains in routine manner by recumbency and plaster casts followed by baking, massage and exercises. This method should yield most satisfactory results at a maximum loss of time and at maximum expense. In a small percentage of cases it is the only adequate method, while in a large percentage of instances this treatment is unnecessary as good functional results from industrial accident cases conclusively demonstrate.

Adjusters for insurance companies abhor plaster casts on injured workmen because they mean prolonged expensive treatment usually. Mechanical braces, massage, manipulations and physical therapy have proved sufficient to return most workmen to industry promptly, even when suffering from severe back strains, so that there has developed an unconscious tendency among industrial physicians to err rather on the side of too little, too brief rest for weakened muscles and ligaments. Some of their cases have prolonged periods of disability simply because massage and exercises are used excessively to a degree that keeps up musculo-ligamentous irritations.

Finally, there remain the topics of manipulations, nerve involvements, exercises, internal medical measures and abdominal belts to be spoken of briefly.

Slight bony dislocations may result from insufficiency of ligaments not infrequently when back symptoms have been induced by definite traumata. Treatment by mechanical supports as for simple strains, then, is often insufficient. The problem of forcible manipulation is confronted either with or without anesthesia, as it is an established fact that almost instantaneous relief is afforded in some instances while there are possibilities also for very serious additional damage from injudicious maneuvers.

Temporary paralysis of bladder and intestinal sphincters indicates that lumbar or pelvic nerves can be involved at times after slight dislocations to important degrees; but these cases do not disprove the probability that pains and soreness of simple strains are due in the majority of instances to lesions of ligaments, muscles, and to irritations at points of their bony attachments. Usually there is no justification for the diagnosis of sciatica because there is tenderness at the sacrosciatic foramen associated with leg pains. Tenderness at this point commonly means weak, irritated, sacrosciatic ligaments, and leg symptoms often promptly subside when ligaments are supported. Chances for plausible explanations of painful symptoms through reflex nervous mechanisms, or direct pressures and strains are so abundant that no explanations can be proved conclusively as a rule.

Exercises comprise the second part of each physiologic cycle in restorations of normal muscular or ligamentous functions. Brace fitters who do not recognize the importance of massage, manipulations and graded exercises understand only half of their problems; and physical therapeutists who condemn mechanical supports because of their limitations, likewise miss half of the correct conception of their work.

It is true that the majority of patients will get well in time, finally, even though they receive only exercises and no supports; also it is true that patients will recover with supports alone without purposeful massage and exercises when they discard their braces. Best results are attained by combinations and alternations of these two physiologically opposite methods if they are used in moderation in most cases.

Internal medical measures that correct underlying vascular or nervous defects often yield brilliant therapeutic results as when such defects as autointoxications of middle age or anemias of adolescence and early adult life which are diminishing muscle tone and ligamentous strengths are rectified. In the majority of cases of mild back strain without serious traumata at times of onsets, attention to internal medical measures is of far greater importance than corrections of moderate lumbar curves. If first parts of rational treatment, namely, adequate early support of back muscles and internal medical measures are prescribed properly the need of corrections of faulty postures later will be greatly reduced or eliminated entirely.

Abdominal belts have to be mentioned because they increase strengths of lumbar and sacral ligaments and restore muscle tone indirectly through their effects on sagging imperfectly functioning abdominal viscera. The latter are benefited as much sometimes by mechanical supports which pull the organs upward and backward gently toward the spine, as they are by internal medical measures and diet regulations.

The blood, as a result of combined measures, belts, internal medicines and diets, improves in quality, and all regions of the body including relaxed back muscles which have been showing evidences of weakness are restored to their previous normal conditions or possibly to states of greatly increased functional efficiency.

In passing, attention should be called to the fact that functional efficiencies of abdominal viscera and visceral ptosis are two independent matters, although commonly poor functions accompany sagging of the organs.

There are many instances, nevertheless, of extreme visceral ptosis associated with good physiologic function of displaced organs, the latter having slowly readjusted themselves satisfactorily to their altered anatomic positions. Applications of abdominal belts to such patients for correction of their anatomical peculiarities is comparable to anatomic corrections of strong symptomless flat feet or strong hollow backs. More harm than good easily results from disturbing these stabilized satisfactory physiologic balances; for it is very difficult by therapeutic means to push them extremely slowly and gently back into ideal anatomic positions from which it is assumed they came. Rapidity and roughness in corrective measures upset stabilized functions, and when good physiologic efficiencies already exist there should always be very careful weighing of benefits derived from letting patients alone with benefits of increasing both their anatomic and functional effectiveness a little more through protracted, expensive, irksome treatments. It should be needless to add that abdominal belts, as with back braces and foot supports, should be worn for as brief periods as possible and discarded when functions of abdominal viscera are noticeably improved.

The principal cause for unsatisfactory results of treatments of back strains at present lies perhaps in the circumstance that care of these patients is scattered throughout the rank and file of general practitioners. The latter naturally do the best they can with facilities at hand, and many cases recover promptly as a result of the treatments they receive. Serious cases eventually drift into hands of specialists, and numbers which receive early careful study may be augmented somewhat in the future as complexities of the problems and dangers of delay are more universally understood, and as managements of patients' care without suitable facilities and with insufficient familiarity with the difficulties are condemned more strongly and universally.

THE EFFECT UPON THE BLOOD PRESSURE OF THE INJECTION OF ADRENALIN IN DEMENTIA PRAECOX.

By Lawson G. Lowrey, A.M., M.D., Boston,

Chief Medical Officer, Psychopathic Department, Boston State Hospital; Instructor in Neuropathology and Psychiatry, Harvard Medical School,

and

W. W. Wright, M.D., Boston,

Interne, Psychopathic Department, Boston State Hospital, 1918-19.

Two papers on this topic, one by Neubürger and one by Walter and Krumbach, were reviewed in the *Psychiatric Bulletin* for January, 1916, by A. Hoch (page 104). The cases presented showed a considerable variation in reaction to adrenalin, which usually (though apparently not constantly) gives rise to an increase in blood pressure in normal individuals. Both papers present certain cases regarded as normal in which such rise failed to occur. Schmidt (*Münchener Medizinische Wochenschrift*) had shown, as he believed, that cases of dementia praecox, especially the hebephrenic and catatonic types, failed to react to such injections.

The observations recorded in the first two papers mentioned reveal much variation in reaction among the praecox cases, with failure of reaction in certain manic-depressive cases, so that the value of the test in differential diagnosis was regarded as extremely limited, especially in that very difficult field where an accurate aid is so much desired, *i.e.*, between manic-depressive and dementia praecox.

Other observers have claimed that the instillation of adrenalin into the conjunctival sac is not followed by the characteristic reaction in dementia praecox, but S. C. Fuller, working at the Westboro State Hospital, showed that the reaction occurred in otherwise typical praecox cases, and failed to occur in cases not praecox in type, and so concluded that the reaction was of no value in diagnosis.

Our work was done in the winter of 1918. In all seventy-eight cases were tested. The blood pressure was first taken; pressure in the cuff released: a subcutaneous injection of 1 ccm. of 1-1000 P. D. & Co. adrenalin solution given. The blood pressure was then taken five, ten, fifteen, twenty, and thirty minutes after the injection. In sixty-eight of the seventy-eight cases there was a rise in the blood pressure, in all but one case the maximum rise occurring in fifteen minutes, and in all but nine cases within ten minutes. The maximum rise varied from five to fifty mm. Hg., and no significance can apparently be attached to the height of the rise, as the following table will show.

Table I.

Cases Tested and Results.

Diagnosis		—Blood Pressure—	
		Rise	Fall
Dementia praecox			
Undiagnosed type	35	30	5
Paranoid	16	15	1
Catatonic	6	6	0
Hebephrenic	3	3	0
Manic depressive	6	5	1
Acute alcoholic hallucinosis	4	3	1
General paresis	5	3	2
Delirium with influenza	2	2	0
Hysteria	1	1	0
	78	68	10

In the unclassified group of dementia praecox, eighteen showed a rise of 10 mm. or less; and only three over 20 mm., one of these reaching 50 mm. Hg. In the paranoid group eight rose 10 mm. or less, and two over 20 mm. Hg. Four of the six catatonic cases rose from 15 to 20 mm.; all of the hebephrenic under 15. Fourteen of the 54 cases in the dementia praecox group showing rise, rose 5 mm. or less.

The only significance to be attached to observations in the other groups lies in the fact that some cases show a drop in blood pressure. The rises are from 5 to 25 mm., most of them under 20.

In the one case of hysteria we were dealing with a man with hysterical paralysis of the right arm. Before the injection the blood pressure in both arms was 110/90. Five minutes afterward it was 135/85 in left, and 130/85 in right; but ten minutes after the injection the blood pressure in the left arm was nearly normal—115/80—while in the right (paralyzed) arm it was 125/80, a striking point meriting further investigation in similar cases.

SUMMARY.

From an analysis of the blood pressure reactions to the injection of adrenalin in 78 psychopathic cases, it is clear that it does not have the value in differential diagnosis which has been claimed for it, at least in early cases, since cases of praecox show a rise and other cases show a fall. In 54 of 60 cases of dementia praecox there was an increase in blood pressure, 40 of these showing rise of more than 5 mm. Hg. In 18 cases of other types taken for com-

parison there was a depressor reaction in four. The cases were carefully selected so that we might be as certain as is clinically possible that they belonged to the groups stated.

Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., BOSTON.

A STUDY OF FIFTY WORKERS IN TRINITROTOLUENE.[1]

A STUDY was made of fifty partially selected men engaged in purifying and packing the material, at a plant on the Atlantic slope during September, 1918. The writers group the symptoms of mild trinitrotoluene poisoning as follows, approximately in the order of their usual appearance:

1. Those apparently due to gastrointestinal irritation—distress, diarrhea, loss of appetite, nausea, vomiting.
2. Those due to cutaneous irritation—dermatitis.
3. Those due to alteration of the blood—dyspnea on exertion, dizziness, headache, fatigue, pains in the legs, sleepiness.
4. Those due to renal irritation—urgency and frequency of micturition, lumbar pains.
5. Those due to degeneration of the liver—pain and tenderness in the right epigastrium.

Thirteen men reported cutaneous irritation coming on during the first three weeks of exposure, usually during hot weather. All these men had had the milder symptoms of gastrointestinal irritation during the same period, but with one or two exceptions they did not seem very sick. All the workers' hands were stained and orange color. Gloves did not wholly prevent staining. In many the hair and beard took on a reddish brown tint. In some the whole face had a characteristic wizened, grayish yellow look. In thirty-three a distinct bluish coloring of the mucosa could be made out. Nine cases of dermatitis were seen, the eruption consisting of rather close-set discrete pin-head-sized papules, usually rather red. Its favorite location was the extensor surface of the forearm, though it sometimes appeared on the back of the hand and about the face. There was moderate pruritus. No bullous, crusting, or lichenoid lesions were seen, as has been spoken of by the English writers. It is considered that the characteristic discoloration of the skin, and the cyanosis, give a general indication of the extent of absorption; that the skin is the chief avenue of absorption, and that preventive measures should be aimed largely at avoiding contact with the material. They were forced to the conclusion that poisoning by way of the respiratory tract rarely, if ever, occurs. In some instances ingestion by the mouth is probably of some importance, not only in eating lunch on the premises, but also in chewing tobacco handled with fingers loaded with the chemical.

DERMATITIS FROM OTHER HIGH EXPLOSIVES.

Thibierge[2] describes under the title "Le Bouton d'Huile des Tourneurs d'Obus" a dermatitis in workers in explosive shells characterized by rounded pustules with firm walls, containing thick pus, and surrounded by an inflammatory zone. It occurs on the dorsal surfaces of the fingers, on the hands, forearms, and all parts of the body that are directly exposed, and also all parts of the body in contact with the clothing that has been impregnated. There is often, also, a plugging of the pilosebaceous orifices with a black substance as in tar acne.

Ruxton[3] describes the dermatitis occurring in tetryl workers. It appears on the parts of the body that are exposed to the tetryl dust in the workrooms. There may also be intense irritation of the mucous membrane of the pharynx and to some extent of the stomach. He has seen constitutional symptoms but once.

MacLeod[4] has observed a necrosis of the skin in those handling "composition," an explosive. He showed a woman of thirty, a munition worker, who had small painful necrotic lesions of the hands, especially of the tips of the fingers, which were attributed to handling an explosive "composition," containing fulminate of mercury, etc. There was also a slight iritis from the same cause. Several others in the same factory were similarly affected.

Prosser White[5] reported six cases of trinitrotoluene dermatitis from forty to fifty that he had under observation; also two cases of nitrate of ammonia dermatitis, and one case of stomonal dermatitis in a worker whose task was to distribute the cartridges containing this explosive to the men in the mine. Probably the nitroglycerine and the large amount of common salt were responsible; also cases of dermatitis from "conditioning fluid," a preparation containing formaldehyde.

PROTECTIVE GARMENTS IN THE WAR GAS INDUSTRY.

Major H. C. Bradley[6] in an article with the above title states that the need for highly specialized protective garments for workers developed with the demand for the skin irritant gases, like mustard, which are characterized by rapid penetration of the skin by either vapor or liquid, in addition to the effect on the eyes and the respiratory tract. The gas mask gave good protection to eyes and lungs, but the skin was unprotected by ordinary garments. It was found that rubber garments were ineffective on account of the rapid penetration of rubber by mustard, which is held by the rubber near the skin, and they may therefore do more harm than good. Certain kinds of American oil cloth were found to be fairly good, and a large variety of fabrics were experimented with. It was found that varnished oil cloths, made up by impregnating very closely woven fabrics offered the most protection. This will keep out the vapor for hours and the liquid for shorter periods. Complete suits were made from this material, which were, however, clumsy, fatiguing and hot, and it was difficult to induce the men to keep them on. Air-lined suits like a diving dress were also devised, but did not attain any extensive usage. The oil cloth suits that were used mostly, could be tied at the wrists and ankles and had in addition protective shoes and gloves and masks when it was necessary. They were removed after factory hours and demustardized with chloride of lime, water, or long airing, but they had many bad features and no very satisfactory procedure had been devised when the war ceased. Protection of the hands was one of the most difficult problems, and gloves of oil cloth, as well as ordinary cotton gloves dipped in linseed impregnating mixtures were tried, but they were quickly worn out. Heavy rubber gloves were fairly good, but the mustard accumulated and was dissolved in the rubber itself and caused burns. Gloves made by impregnating leather gloves with a carnauba wax and oil formula were found to be best and the same formula was used to impregnate leather shoes.

ALOPECIA FOLLOWING LA GRIPPE.

Thibierge[7] reports that he had been impressed with the frequency with which la grippe was followed by alopecia in both women and men, the fall beginning, according to his observations, almost always from 55 to 80 days after the beginning of the general symptoms. The fall is, from the beginning, considerable, the comb or light traction with the fingers bringing out a large number of hairs, together with their bulbs. In many cases Thibierge observed this falling to occur in the "patchy" form, characterized by the development of multiple zones of alopecia from one-half to one centimeter in diameter, with oftentimes rather ill-defined contours. This form, as is well known, is frequent in secondary syphilis, and is considered one of the most typical manifestations. In the case of Thibierge's patients, the likeness to syphilitic alopecia was so strong, that the diagnosis of syphilis was not abandoned until the absence of all other signs had been established, and the Wassermann reaction found negative.

The patchy distribution of the alopecia is only temporary, as the violence of the falling soon changes this into a diffuse alopecia of extreme intensity. The hairs affected are often dry, and of grayish appearance; they come out on the slightest traction, and one gets the impression that with a little patience complete baldness could be produced. The scalp is sometimes of normal appearance, more often it is the seat of a moderate desquamation. This alopecia is somewhat more marked after severe cases of la grippe, with high fever, pulmonary and intestinal complications, than after the milder cases, yet is often present in the latter. It is seen especially in those who are much debilitated and reduced in weight. This form of alopecia seemed to have a more rapid evolution and a greater intensity than most of the alopecias that follow the infectious diseases, especially typhoid fever. It is almost equal to the alopecia that follows erysipelas of the scalp, which is so dependent for its intensity and extent on the local infectious process. It seems to disappear rapidly, and to leave permanent baldness only in those predisposed by heredity. Besides local stimulants to the scalp, arsenic, phosphorus, and general strengthening measures are indicated.

Sabouraud[8] in a paper on "Les Alopécies post-fébriles," considers that the epidemic of la grippe that has just passed has been the cause of the most intense cases of alopecia that he has ever seen, except in typhoid fever. He found in this epidemic that the alopecia was always in proportion to the intensity and duration of the fever. The fall of hair is always diffuse but not uniform, as it is especially pronounced on the anterior segment of the head, and about the temples. He advises strongly against cutting off the hair with the idea that it will facilitate the new growth, or that cutting small hairs will increase their size.

THE CUTANEOUS COMPLICATIONS OF BASEDOW'S DISEASE.

DuCastel[9] observes that in the course of Basedow's disease the skin is moist, oily, and of a dirty gray color, and that hyperidrosis is one of the most constant symptoms, most marked in proportion to the severity of the case. Paroxysms of hyperidrosis appear without cause, or produced by the slightest effort or emotion, and they may be diffused or localized.

Vasomotor disturbances are shown by the transient flushings of the face with burning sensations, which are an early symptom of the disease, and these congestions are followed by urticaria and oedema. Dermographism is common.

Nervous oedemas are characterized chiefly by their restricted localization, and they are often also unexpected. This oedema is usually of rather firm consistency, sometimes almost solid, like myxoedema, or scleroderma. Its evolution may be acute, resembling so-called giant urticaria, or chronic. There is a total absence of etiology for these oedemas; there is no cardiac or renal disturbance, and the inefficacy of thyroid treatment seems to show that they are not caused by myxoedema. Purpura is much less common than oedema, and is often hardly more than a tendency. Trophic changes are seen in the skin, and take the form especially of pigment anomalies, sometimes that of scleroderma. It is difficult to state the frequency of melanoderma. A slight darkening is very common, while an intense grade is very rare. There is hardly ever any pigmentation of the mucous membranes.

Vitiligo has been described by numerous writers and also scleroderma, which latter affection has been observed in simple goitre, as well as in myxoedema. The hair and nails have been affected in certain cases and in certain cases there has been a diffuse alopecia leading to total baldness. The relation of exophthalmic goitre to alopecia areata is an interesting one. A number of cases of this association have been reported. Various other skin affections have been described as of occasional occurrence in Basedow's disease, such as telangiectasis, multiple gangrene, etc.

There is also a series of toxic erythemata associated with this disease. Sometimes the intoxication is manifestly of external origin, more often the toxic agent is unknown or of internal origin. Urticaria and pruritus are also frequently present. Erythema nodosum has been noted and also eczema, but these observations are not sufficiently numerous to warrant any deductions, although DuCastel thinks it fair to assume that the disease favors the appearance of eruptions of pyogenic and eczematous manifestations of ordinary appearance, and may cause them to pursue a long course, or to recur in a striking manner.

AN ERUPTION IN SCURVY.

Nicolau of Bucarest[10] describes an eruption that occurred in an epidemic of scurvy that attacked certain formations of the Roumanian army during the winter and spring of 1918. The appearances of this eruption were quite characteristic so that a diagnosis of scurvy could be made from this alone. At least a fifth of all the scurvy cases presented this eruption. The true elementary lesion of this eruption is a small horny papule, which represents an intrafollicular keratosis. Around this primitive lesion there develops more or less rapidly a process of slow infiltration, which gives rise to papules of different sizes, and sometimes to papulopustules. In a large majority of the cases, the eruption first appeared on the anterior aspect of the forearms and thighs, as well as in the subumbilical region of the abdomen. It may remain confined to these regions for a more or less long time, or more commonly it may extend progressively and occupy in a few weeks a large surface of the body, although there are always portions that are not affected, as the head, axillae, wrists, hands and feet, etc. The eruption does not cause pruritus, and may remain stationary for several months, or begin to disappear slowly under rest and appropriate treatment. The papules begin to disappear by absorption and may be gone at the end of five or six months, leaving no trace behind. In some cases the papulopustules are converted into ulcers, which have a sluggish course, with no tendency to healing until the general condition of the subject improves.

It is not only the advanced cases of scurvy that present this eruption, as it is often one of the first manifestations, preceding the lesions of the gums and the cutaneous hemorrhages by several weeks. The writer was enabled, in the course of the epidemic in question, to form a diagnosis of scurvy in many otherwise doubtful cases by means of this eruption alone, hence its importance as a diagnostic sign is to be emphasized.

NEUROTIC EXCORIATIONS.[11]

Papers on this subject were read at the last meetings of the Section on Dermatology of the American Medical Association and of the American Dermatological Association, by MacKee, and Pusey and Senear, respectively. MacKee very properly considers that the term neurotic excoriation is best limited to the traumatic lesions produced by a person without intent to deceive, although Erasmus Wilson has included under the head the neurotic lesions caused by malingerers, and it is with the former class that most of the observations recently recorded are concerned. Several grades of this neurotic tendency are observed, from mild cases in which the excoriations are produced by an unconscious habit of digging at any slight inequality in the skin when absorbed in reading or study, to more pronounced cases in which the habit cannot be controlled and the person finds it impossible to resist the temptation to pick at and dig into all sorts of slight lesions, or variations from the normal condition of the skin.

Another type of an allied nature is that familiar to most dermatologists in which the patients have an obsession that there are foreign bodies in the skin that must be removed in order to get relief. The crusts are continually picked and torn off, and perhaps a little fibrous tissue and serum removed, affording a temporary mental relief, but the procedure is soon renewed. These cases are of the same character as acarophobia, in which the patient has the obsession that he is infested with insects and is constantly picking at the skin, when there may be no lesions at the start, and imagining that he finds insects within it. Sometimes he will produce small particles of woolly fibre or cotton that have cohered to the skin, or even insects that never infest the skin. These cases of true acarophobia are very resistant to treatment, and it is almost impossible to remove the delusion.

Colcott Fox has described cases under the title "Dug-out excoriations" which have a similar origin to the neurotic excoriations of Wilson. They are far more common in females than in males and in people who have not reached middle age. In a majority of these cases there is evidence of a neurotic tendency, in some a definite hysteria, or a family history of insanity. The favorite sites are the face, limbs and chest, although any part of the body may be affected.

Brocq has described under the name of excoriated acne of young women (*l'acné excoriée des jeunes filles*) a condition not infrequently seen in women with acne, that belongs among the types we are considering, in which an almost irresistible impulse to pick and dig at their acne lesions occurs. It should be noted that this type is not always confined to young women but may be met with in those of middle age. There is often a more or less nervous element in these cases. MacKee cites a typical case in an unmarried woman of 22, who had an exceedingly mild acne, which she continually interfered with mechanically so that small papules, comedones and pustules were converted into large nodules and excoriations, and her face was quite severely scarred. This patient was not neurotic and offered no reason for picking except to remove the cause of the lesions.

Pusey and Senear report a case of a traveling salesman of 42, who came for treatment for a disfiguring scarred eruption of his face. The scars were found to be of linear, stellate or oval shape, and evidently represented the sites of previous wounds and cuts of the face. The scars were most pronounced underneath the chin, and in this situation there were also crusted ulcers, and nodules, some of them undermined. He acknowledged that these wounds were caused by his own digging into the skin, as the nodules produced by previous incisions would become uncomfortable, and he got relief by cutting them open, and working into them with a knife or a pair of tweezers. He thought that he had a rare undescribed affection, and had consulted various physicians. He believed that there was diseased tissue in the lesions, which must be removed in order to get relief and effect a cure. He would spend hours standing before a mirror and digging at his face. There was some history of insanity in his family.

REFERENCES.

[1] Putnam, Tracy Jackson, and Herman, William. Jour. Industrial Hygiene, September, 1919.
[2] [illegible]. Bulletin de l'Academie de Méd., March 12, 1918.
[3] [illegible]. [illegible] Derm., March, 1917.
[4] MacLeod. Proc. Royal Soc. of Med., Feb. 17, 1916.
[5] White. Lancet, Feb. 19, 1916.
[6] [illegible]. Jour. Industrial Hygiene, September, 1919.
[7] Thibierge. Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris. Seance du 20, Dec., 1918, p. 1223.
[8] Sabouraud. Paris Méd., June 7, 1919, No. 23.
[9] Du Castel. Paris Méd., 10 May, 1919.
[10] Nicolau of Bucharest: Annales de derm. et de syph., Tome vii, No. 11.
[11] MacKee, Pusey, and Senear: Archives of Dermatology and Syphilology, March, 1920.

Book Reviews.

Physical and Occupational Reëducation of the Maimed. By Jean Camus. Translated by W. F. Castle. New York: William Wood and Company. 1919.

This volume, *Physical and Occupational Reëducation of the Maimed*, is one of the most complete works describing the French methods of reëducating wounded men. It has been translated into English in order to render assistance to those in this country who are dealing with similar reëducational problems. Four chapters describing English Institutions—St. Dunstan's, Lord Roberts Memorial Workshops, and Queen Mary's Convalescent Auxiliary Hospitals at Roehampton—and the chief types of artificial limbs in use in England have been added as an appendix. The importance of both psychotherapy and physiotherapy, and the general principles in occupational reëducation, such as environment, time of starting training, the physical and mental state of the wounded, artificial limbs, and the choice of occupation, are considered; and the special education of men who have undergone amputations, of men who have received injuries or have been blinded, is discussed with reference to the nature of the injury.

Agriculture promises to be one of the most useful fields of reëducation. Men who have lost one arm are particularly adapted to this work, for agricultural machine levers may be altered to meet individual deficiencies, and a set of five working hands can be provided. A description of the Agricultural School for the Disabled at Ondes, the South-Eastern Institute for Wounded Farm-Hands, and the Belgian School for Agriculture at Port-Villez, shows the methods which have been employed and the results which have been accomplished at these institutions. At the Fayl-Bellot School, the wounded are given instructions in basket-making. The National Dairy School at Mamrille trains men for cheese-making, dairy inspecting, and dairy-farming. The advantages which might be gained by Government encouragement of silk-producing in Algeria are many; methods of organizing this industry are suggested in this volume. This book gives a helpful account of methods which have been used by the French with success, and should be valuable to those in charge of the reëducational work in this country.

Trench Fever. By Major W. Byam, R.A.M.C. London: Henry Frowde, Hodder & Stoughton. 1919.

It is probable that trench fever has been responsible for more disease on the Western Front than any other infection; unless adequate measures are adopted for its prevention, it may be carried to all parts of the world where conditions are favorable for the spread of the louse-borne disease. This is the opinion of the authors of "Trench Fever," in which Major Byam and his co-workers have presented an account of the investigation which has been conducted at Hampstead by the War Office Trench Fever Committee. This committee was the first to demonstrate by experiment the part played by the louse in the transmission of trench fever. The book describes the symptoms of the disease as observed in two hundred consecutive cases. The modes of transmission of trench fever, the question of immunity, and the pathology of the disease are carefully discussed and valuable evidence is presented as a result of these experiments. Trench fever as a chronic condition and its effects upon the heart are illustrated by the histories of a number of patients. It has been found that age, past medical history, the number of attacks, early rest, and individual recuperative capacity all are important factors in the prognosis of trench fever. In the treatment of disease, the following substances, used in the manner described in this book, have been found useful: acriflavine, galyl, collosol argentum, iodine, and antimony, collosol sulphur, manganese, and palladium, colloidal rhodium, intramine, kharsivan, eusol, methylene blue, trypan-red, tartar emetic and foreign protein. The sections dealing with the treatment of the disease in both its acute and chronic forms and the subject of prophylaxis are of particular value. The book is illustrated throughout by many charts and diagrams, and in the appendix are tabulated records of the blood transmission experiments. The volume is an important product of the war, and contributes information of considerable value in the solution of a problem which has only recently been recognized as one of great importance.

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THE VALUE OF ANIMAL EXPERIMENTATION.

THAT the usefulness of animals to mankind extends far beyond the food, clothing, and other material needs they supply is shown by studies of the Bureau of Animal Industry of the United States Department of Agriculture. In a recent address, Dr. E. C. Schroeder, Superintendent of the Experiment Station of that bureau, gave the following instances in which experiments with animals contribute to human health and are of economic advantage otherwise.

The Panama Canal would not have been built by this time if animal experimentation had not revealed the specific nature of yellow fever. If it had finally been constructed with no better knowledge of yellow fever than when the French abandoned the project after a cost of 20,000 lives it would have deserved such a name as "the water lane of the yellow death."

Animal experimentation has provided vaccines, bacterins, and antitoxic sera; it has aided in the development of new methods of surgery and of reliable means of diagnosing infectious diseases; it taught us how to use gases during the war and how to defend our soldiery against them. In the absence of such knowledge the recent war would have cost additional thousands of lives and would have produced many additional thousands of cripples.

If animal experimentation had not taught us how to cure many diseases of the lower animals and how to suppress appallingly destructive live-stock plagues, the hunger and starvation prevalent in some parts of the world would be practically universal. Experiments with animals have provided means for controlling human diseases like smallpox, Asiatic cholera, bubonic plague, malaria, typhus fever, and yellow fever.

Animal experimentation has enabled the United States to exclude from the country, or to control, food-destroying diseases like rinderpest, foot-and-mouth disease, anthrax, Texas fever, hog cholera, surra, swine erysipelas, contagious pleuropneumonia of cattle, and sheep scab.

Without abundant live stock—the result of animal-disease control—it is questionable whether food enough for the present population of the world could be produced. Live stock convert enormous quantities of grass, hay, and coarse vegetable matter, unfit for human stomachs, into easily digested, nutritious food.

Because of the similarity between the human body and the higher animals, discoveries useful to stockmen and veterinarians are of service also to hygienists and physicians. Animal experimentation has resulted in the following basic knowledge: Circulation of the blood, capillary circulation, the vasomotor mechanism, functions of the nervous system, the flow of chyle in the lacteals, the passage of chyle through the lymph ducts into the venous circulation, the nature of the digestive fluids and chemical transformation of food through their action; functions of the lungs, kidneys, and other organs; the reaction of the cells to various kinds of stimuli; significance of the endocrin glands; nature of inflammation and other pathological processes; and numerous other discoveries in physiology, pathology and biochemistry.

Experiments with live stock have contributed richly to the current knowledge of drugs and their uses and to the precise information we have of the therapeutic, physiologic, and toxic actions of the innumerable substances from which our useful drugs have been selected.

Without specific knowledge of how drugs act on the body as a whole, or on special parts of the body, and whether their action is immediate or cumulative, the death rate among persons and animals would be multiplied, and the greater losses among the latter would be a serious economic disadvantage.

Animal experimentation has proved that the manifestations of tuberculosis in different portions of the body and in the bodies of different species of animals all have one essential cause; it proved that the disease is contagious; it led to the discovery of the tubercle bacillus; it proved that the bacillus is quickly destroyed by light, but may long remain alive and virulent in dark places; it proved that there are three types of tubercle bacilli, the human, the bovine, and the avian; it proved that the avian type is not an important cause of disease among mammals; it proved that the human type is the commoner cause of tuberculosis among human beings; it led to the discovery of tuberculin, without which, used as a diagnostic agent, the control and eradication of tuberculosis among food-producing animals would be impossible.

Experiments with animals have given information that prevents untold suffering of both persons and animals by aiding in the preservation of health and hastening recovery from sickness. Persons who treat diseases among animals probably relieve more pain every day than animal experimentation causes in a score of years; and they do this through the agency of knowledge that the experiments supplied.

The foregoing summary of results is believed to be of general interest especially as it relates to the frequent assertion that live stock receives more scientific study than human beings. The fact remains, however, that greater knowledge and skill applied to live stock raising is a definite means of benefiting mankind. For instance, the development of an ample and safe milk supply is obviously a practical way to reduce mortality among and to correct undernourishment of babies. Similarly the eradication of parasites in sheep is an essential step toward an adequate supply of wool clothing.

BRITISH TRIBUTE TO AN EMINENT AMERICAN SURGEON.

At a dinner given by the American Hospital in London in honor of Dr. Charles H. Mayo of Rochester, Minnesota, worthy tribute was paid to Dr. Mayo and to the American profession by Lord Reading, president of the hospital, and by Mr. Balfour. Lord Reading expressed his belief that between England and America there exists a greater bond of sympathy than between any other two countries. In proposing the health of his guest, Lord Reading said that the names of Dr. Mayo and his brother were household words in America, in England, and elsewhere wherever medical education and research were honored and wherever there existed a desire to promote them. Lord Reading referred to the constant interchange of men and ideas between the two great English-speaking countries and stated his conviction that the institution of the American Hospital in London will be another link in the chain which binds together England and America. In responding to the toast, Dr. Mayo referred to the heredity of Americans, which is mainly British, and said that the bond of friendship which exists between these two countries can never be broken. Dr. Mayo pointed out that the development of the American Hospital in London is another proof of Anglo-American unity. Mr. Balfour also commented upon Dr. Mayo's work and expressed the hope and belief that the American Hospital in London will further greatly international medical progress. In medicine, said Mr. Balfour, more than in any other science, human interests are reached closely, and there is added a humanitarian touch which glorifies even the most sublime scientific discovery. It will prove to be a great advantage for medical ideas on each side of the Atlantic to be known to the profession of the other. A more complete understanding is needed than can be acquired through reading, if surgeons, physicians, students, and investigators in medical science are to promote professional interests and activities to the best interests of humanity. Mr. Balfour believes that nothing could be of more value to international medical progress than an institution like the American Hospital in London.

MEDICAL NOTES.

Appeal for Nurses in New York.—The New York Health Department through the Bureau of Child Hygiene has issued the following appeal for nurses:

"Nursing as conducted by the Bureau of Child Hygiene, puts the trained nurse in place of the teacher. They teach and influence the young mothers and school children on the principles and prevention of disease. The Health Department offers many advantages and opportunities for promotion to trained nurses that are not available through either private or institutional nursing.

"The public health nurse is pensioned after twenty years' service on half pay, and while in active service she is entitled to a month's vacation, all legal holidays and Sundays and half day Saturdays. Unlike the private nurse, she does not have to 'live in her dress suit case' and work long hours. When a case is finished the nurse must return to the registry and wait in idleness for the next case.

"Applicants for nursing in the department must be citizens and residents of this State, and they must be registered nurses before certification. The salary after August 20, will be $1,144 a year."

Appointment of Dr. V. J. Harding.—The announcement has been made of the appointment of Dr. V. J. Harding, associate professor of biological and physiological chemistry at McGill University, to the professorship of pathological chemistry in the University of Toronto.

Military and Naval Insurance and Compensation.—There has been issued recently by the Bureau of War Risk Insurance an actuarial report entitled, "Military and Naval Insurance and Military and Naval Compensation Claims as the Result of the World War," which was printed in a very limited edition and is a valuable addition to the statistics of the subject.

The report constitutes a scientific cross section of the period of actual hostilities and the high tide of demobilization between April 6, 1917, and June 30, 1919, in a study of the exposure of the American forces of war hazards, based on an analysis of 104,485 death cases in their relation to the payment of War Risk Insurance, 565 cases of total permanent disability payable under the insurance provisions of the War Risk Act, and 25,251 cases of death, and 32,876 cases of disability ranging from cases of total permanent disability to disability of 10 per cent. under the compensation features of the Act, which are separate from the insurance features.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending July 24, 1920, the number of deaths reported was 135 against 155 last year, with a rate of 9.40* against 10.15 last year.

The number of cases of principal reportable diseases were: Diphtheria, 25; scarlet fever, 12; measles, 51; whooping cough, 55; typhoid fever, 8; tuberculosis, 54.

Included in the above were the following cases of non-residents: Diphtheria, 4; scarlet fever, 2; measles, 3; tuberculosis, 8.

Total deaths from these diseases were: Diphtheria, 1; measles, 1; whooping cough, 2; typhoid fever, 1; tuberculosis, 14.

Included in the above were the following non-residents: Diphtheria, 1; tuberculosis, 4.

Week's Death Rate in Boston.—During the week ending July 31, 1920, the number of deaths reported was 164 against 173 last year, with a rate of *11.43 against 11.32 last year.

The number of cases of principal reportable diseases were: Diphtheria, 29; scarlet fever, 15; measles, 18; whooping cough, 42; typhoid fever, 6; tuberculosis, 39.

Included in the above were the following cases of non-residents: Diphtheria, 7; scarlet fever 2; measles, 1; typhoid fever, 1; tuberculosis, 6.

Total deaths from these diseases were: Diphtheria, 2; scarlet fever, 1; whooping cough, 2; tuberculosis, 20.

Included in the above were the following non-residents: Diphtheria, 2; scarlet fever, 1; tuberculosis, 1.

Appointment of Dr. W. Thurber Fales.—Dr W. Thurber Fales of Malden has accepted an appointment as instructor in biology and public health in the medical school of the Johns Hopkins University.

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* Rate figured to conform with Boston's population estimate as given in Federal Census of 1920

Correspondence.

THE NURSING PROBLEM.

Mr. Editor:—

The papers read at the recent Massachusetts Medical Society's meeting in the Hospital Administration Section, and the resulting discussion raise a pertinent question. In our attempts to improve the standard for nurses by set regulations and requirements are we not in danger of losing sight of our ideal?

Our ideal, it readily will be admitted, is to furnish the best possible nursing service to the community. It will also readily be admitted that a high school graduate, or, still better, a college graduate, when given four years of hospital training, should be a better trained nurse than one without such thorough training. But there always have been and always will be women qualified by knowledge and character but without such training who can serve the community most acceptably as able and trusted nurses.

The nursing situation is acute. There are not enough good nurses to meet the demands of the community and there are not enough women entering our nursing training schools to meet the demand for nurses that will exist in the future.

Various and sundry plans are offered to meet the situation. Some suggest raising the standard of the requirements for nurses and legislative action has been proposed along this line. Others, particularly those interested in the nursing problem as it affects the state hospitals, have opposed action which they think would tend to make the nursing problem in the state hospitals still more acute. The opponents of the proposed legislation recognize that if a high school requirement is enforced there are not going to be enough high school graduates in the country to supply the demand, not even allowing for the fact that a great majority of high school graduates have not planned to become nurses. Seemingly there is on foot an attempt to organize the nurses into the equivalent of a labor union and to introduce closed-shop methods with fixed rules as regard hours, wages, etc. Perhaps the community will agree that organization and closed-shop methods that demand fixed hours and flat wage scale, regardless of individual ability or experience, are advisable for nurses, but there is also an excellent chance that the community will hold that nursing is a branch of public service and should no more be unionized than the police force.

To have the nurses registered is commendable but to decree that only graduates of certain training schools can be registered and that these graduates must be high school trained is absurd and impractical. It is doubtful if the profession of nursing will be benefited by carrying through a plan of registration that says to the great majority of women who earn money by caring for the sick: "You are not trained nurses, you are only attendants." An attempt to improve nursing standards is to be commended, but an attempt to handicap, even though merely by nomenclature, the great body of nurses must give rise to much criticism and injustice. As a case in point, showing the absurdity and injustice of regulations, I, know of one excellent nurse of superior antecedents, academy trained, president of her hospital training school class, a graduate of the post-graduate course at the Massachusetts General Hospital, an assistant superintendent of nurses in a large western hospital for one year, a superintendent of nurses in a Boston hospital for more than a year, who saw service for over two years with a Boston hospital unit in France and has since taken a post graduate course in public health nursing at Simmons College, who now finds that in the future she will be debarred from any work with the Red Cross because in her initial training she did not have two consecutive years within the walls of a hospital.

The community presumably would be benefited by the registration of all women practising the nursing profession in the community and the suggestion is made that it would be well to register all women who are practising nursing, regardless of training, as registered nurses and that their registration cards should show the extent of their training and that such a registration card should be exhibited to anyone desiring to employ the nurse's services. The nurses then could be further classified on their registration cards as pupil or graduate nurses. Such a scheme would give the public greater knowledge of the women who are attempting to practise the nursing profession. It would avoid the disliked term, "attendant," and would help solve the present situation as it would open a chance of remunerative service to women who have had some training, and at the same time would encourage these women to take more and more training, in order to be more highly graded. The present system which allows a nurse who has no wide experience to put on a black band and demand five dollars a day or more as a trained nurse might be improved.

It is most unfortunate to have any discussion as to nomenclature further handicap those who are attempting to provide nurses for our state hospitals, or to frustrate the efforts of those who are trying to improve the standards of the nursing profession.

Dr. Worcester's recent editorial in the Journal is suggestive and helpful but it is surprising that in his different branches he includes no division of mental nursing. The importance of mental nursing is being more and more recognized and there seems no reason for demanding that there should not be complete reciprocity between mental and general hospitals. If it is right to demand that the mental nurse must have some general hospital training it certainly should be entirely right to demand that every general hospital nurse should have some mental training.

The importance of mental training was thoroughly demonstrated by the experiences in the war and it can hardly be denied that a nurse with some knowledge of psychiatry and occupational therapy is better qualified for community nursing than a nurse without such training.

It is most sincerely to be hoped that the efforts to furnish the best possible nursing services to the community will be successful, and that the desires both of those who are striving to raise the standards of nursing and of those who are attempting to keep the standards low enough to allow an adequate number of women to enter the profession will be realized.

Yours very truly,
Donald Gregg, M.D.

Wellesley, Mass., July 28, 1920.

RECENT DEATH.

Dr. Norman Perkins Quint, a retired Fellow of the Massachusetts Medical Society, died at a private hospital in Boston, July 27, 1920, aged 73. Dr. Quint was born in Malden, graduated from the high school in that town and from Harvard Medical School in 1870. For nearly 20 years he had been medical examiner for the 7th Norfolk District, having his residence in West Medway.

MAY 1, 1919, JOURNAL WANTED

The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass., will pay 25c for a copy of the Journal of May 1, 1919. Please mail as early as convenient, to this office, and we will remit by return mail.

The Boston Medical and Surgical Journal

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Original Articles.

ACIDOSIS OF THE RECURRENT VOMITING TYPE. THE CASE OF DARTHEA M.

By W. W. McKibben, M.D., Worcester, Mass.

Acidosis as defined by Cautley is "an abnormal metabolism of carbon leading to the appearance of organic acids in the blood and urine, and to formation of ammonia to neutralize these acids."

The term had become so generally misused by faddists, who made no tests for the acetone bodies in the urine, that it was refreshing last summer to see such articles appear as Garland's statistics from the children's ward of the Massachusetts General Hospital. He called attention to the fact that of 734 consecutive cases admitted, 127, or 17%, showed acetone in the urine by the sodium-nitro-prussid test, this being used for standard for the acid group. Only two were discharged with the sole diagnosis of acidosis, showing that acetonuria is a common clinical finding, whereas acidosis is relatively rare. Respiratory diseases represented 43%, and the acetone was more frequently found during fevers.

In the March number of the *British Medical Journal*, Thomas described febrile acidosis in seven consecutive cases of scarlet fever, recommending that sodium bicarbonate be given for a week or ten days, the dose being regulated by the reaction of urine. He advises this treatment in every other acute febrile complaint of children. This suggests the advisability of a low fat and high carbohydrate diet in these cases.

In contradistinction to this frequent acetonuria seen in febrile and metabolic troubles of childhood is true acidosis or acid intoxication. This is similar to a third type I am about to describe, to a certain point, but often not improving as the vomiting ceases; then follow delirium, convulsions, air hunger, half-closed-sunken-upturned eyes, injected conjuctivae, cherry-red lips, rapid thready pulse, rising temperature, coma, and death.

But the following case of Darthea M., aged 20 months, is so illustrative of the third type of acidosis known as recurrent, cyclic or periodic vomiting, that it may be taken as a description of the symptoms and problems of this acid syndrome.

Darthea's great-grandmother, on the maternal side, had a severe attack of rheumatic fever every January for nine successive winters, and also had sciatica and heart trouble; the great-grandfather had "catarrh" badly, as did his son and grandson; he, too, had articular rheumatism and died of heart trouble. Her grandfather was subject to croup till eight years of age. Her grandmother was a sufferer from sciatica and articular rheumatism and had bad tonsils; her uncle had over one hundred boils and carbuncles due to purulent ethmoidal sinusitis, relieved by removal of part of the middle turbinate and nasal polypi; her father had carbuncles or deep-seated abscesses beginning every summer when fresh vegetables and violent out-of-door sports were indulged in; x-ray showed two bad root abscesses; extraction was followed by relief unless fatigue intervened; 104 protein skin tests were done in October and a diet followed, but it is too early to draw conclusion as another summer has not yet arrived. A blood-cousin began Eskay's albuminized food at ten months and soon had disfiguring urticarial spots break out on the face which persisted until she was 2½ years old, when she had a fresh crop every Sunday; although she was not getting eggs in her diet, it was discovered that her father treated her to an ice cream cone at Elm Park Spa every Saturday afternoon. This was stopped and her face has been clear for nine months.

The baby's mother had colds and croup with cyanosis when one to two years old; also urticaria; pertussis at six years, was followed by all-night attacks of asthma till her marriage, when the removal of a spur and a part of the turbinates entirely and permanently relieved her, so that she was in perfect health for 12 years until a month and a half before the baby came, when there was a sudden suppression of the urine to four ounces in 24 hours, backache, headache, diplopia, blurred vision, vertigo and swelling of the fingers and ankles; her blood pressure did not exceed 134 nor were there any casts or albumin in the urine; these symptoms have persisted ever since to a milder degree in spite of two complete x-rays of the teeth, followed by two extractions of teeth and enucleations of both tonsils; she had over a hundred protein skin tests done in October, and although following a rigid diet, she was not wholly relieved, although much better of her symptoms.

Consequently Dr. Oliver Stansfield, physiochemist at Memorial Hospital, was asked to look over the mother's urine. He returned the following instructions on finding a heavy trace of albumin:—

"I am enclosing a scheme for examination as well as a diet list. Of course the diet will vary somewhat as conditions vary, the prime object being to keep the patient in as good physical and mental condition as possible. If you will cross out the foods to which she is protein-sensitive we can rearrange the list more definitely. The plan of examination will cover the case very thoroughly. It is essential not to allow anemia to develop, by underfeeding protein, and equally essential not to allow of protein retention. By repetition of these tests, a good account of progress can be kept.

Phenolsulphonephthalein test:—24-hour specimen—with day and night collection separated. Repeated weekly for some time.

Blood chemistry—repeat in a week.

Thorough physical examination, including eye grounds.

Blood examination for hemoglobin, red and white cells and differential—repeated monthly.

Blood pressure twice weekly. Weight taken twice weekly.

Diet: Salt-poor-fluids limited according as weight varies. Diet protein poor.

Eliminate from groups food to which sensitive. Foods allowed (a star is placed opposite those articles to which she is protein sensitive):

GROUP 1.

Milk, 1 glass
*Custard
Malted milk, 1 glass of, prepared
*Grapenut cereal
*Walnuts (10)
*Brazil nuts (10)
*Oatmeal with cream or milk and sugar
*Cocoa
*Cream toast

GROUP 2.

Buttermilk, 1 glass
*Eggs, 1
*Butter beans
*Red kidney beans
*Corn, green
*Potatoes, white
*Potatoes, sweet
*Bread, brown, per slice
*Bread, white
*Bread, graham
*Buns, cinnamon
*Biscuits, home made
*Rolls, 1
*Barley gruel
*Hominy
*Corn meal
*Spaghetti, baked
*Shredded Wheat Biscuit, 1
*Cakes
*Pies
*Bread pudding
*Chocolate
*Tapioca
*Rice pudding or boiled rice
Blanc mange
Ice cream, vanilla
Almonds (10)
Peanuts (15)
Pecan nuts (10)

Group 3.

Butter, unsalted
*Cream
String beans
*Beets
*Cabbage
*Carrots
*Cauliflower
*Celery
*Cucumber
Onions
*Parsnips
*Squash
*Tomatoes
*Turnips
*Apples
Cherries
*Huckleberries
Gooseberries
*Lemons
*Oranges
Cantaloupes
Peaches
*Peas
Plums
Raspberries
Watermelons
Prunes
*Raisins
*Cranberries
Marmalade and preserves, of allowed fruits
Rhubarb
*Crackers, soda and butter, unsalted
*Force and similar cereal preparations
Ices
*Farina
Honey
*Sugar
*Maple sugar and syrup
*Corn syrup

Method of using diet list:

1. For each helping of food from Group 1, score 2. For each helping from Group 2, score 1. Group 3 need not be scored.

2. Total daily score must not exceed eight.

3. The portions of each food, excepting where mentioned, are the usual helping.

4. The diet should be as free from salt as possible.

5. Fluids should be restricted to a quart per day, temporarily."

The following is the result of Dr. Stansfield's blood and urine examination on the mother January 13, 1920:—

"Blood urea nitrogen equals 45 mg. per 100 cc., which is twice the normal. Urine:—Reaction neutral; Sp. gravity, 1024; albumin, heavy trace; sugar, negative; acetone, negative. Microscopically:—No casts found. No red blood cells, and only an occasional white blood cell. Many squamous epithelial cells."

At Dr. Stansfield's suggestion, following the blood and urine examination, Dr. Lester Miller made a comparatively negative physical examination and Dr. Roger Kinnicutt found normal hemoglobin, red and white cells; there was no leucocytosis.

Dr. John Talbot, her obstetrician, still believed the sight of the focal infection was in the teeth. He found the blood pressure 139. Dr. Fred Crerie, her dentist, however, could find nothing localized by Roentgen ray, but sealed her teeth. Dr. Frank Dean is to again check Dr. Crerie by x-ray for the second time. Dr. Charles Estabrook found the eye-grounds negative.

The day quantity of urine averages from five to six ounces; the night about 15 ounces.

The phenolsulphonephthalein tests showed 45% in two hours.

Twice during the month the 24-hour quantity of urine shot up to 44 ounces; then the weight dropped three pounds. The weight at first 160 pounds, is now averaging 155 pounds.

At Dr. Stansfield's request the mother was for 10 days studied by Dr. James P. O'Hare, at Peter Bent Brigham Hospital. Like Dr. Stansfield, he found the renal trouble functional and not organic. He advised a liberal diet, excluding only those articles actually disagreeing, regardless of protein skin reactions. With Drs. Frothingham and Davidson he concluded that nervous exhaustion was the dominating feature and advised golf and life in the open, avoiding reading books on psychic phenomena, etc.

Darthea M. proved to be a healthy, ruddy-cheeked baby her first year, gaining the required amount for 52 weeks. However, with the starting of orange juice and one feeding of modified milk at five months, she showed transient patches of eczema and urticaria. She was weaned onto modified certified cow's milk at seven months, and was given beef juice at ten months. June 25th, at one year of age, she weighed 21 pounds, her cheeks and body were rosy, and her condition apparently perfect.

It was at this time that cream of wheat, imperial granum, and barley jelly were added to her milk, besides being given wheat bread. After one week of this addition of wheat foods to her diet, the explosion occurred, precipitated by the intense heat just preceding July 4th.

The Worcester Technology Chemical Laboratory had just found a low bacterial count of 2000 on the certified milk; it came packed in ice in Walker-Gordon portable refrigerators.

and all the bottles and nipples were kept sterile. Her face had been blotched with urticaria for several days. After her regular normal defecation on arising she ate well and played happily all Tuesday morning.

At 1.30 P.M., suddenly without warning, she began to vomit. At 4 P.M., when first seen by the writer she was retching and vomiting about every 15 minutes; stomach washing with soda bicarb. relieved for a short time, but later teaspoonful doses of cool boiled water and lime water, alternating with soda bicarb. water, were rejected as soon as taken.

The thirst and prostration rapidly became extreme as did the restlessness; the tongue became heavily coated, the breath of sweet fruity odor much like chloroform, changing later to putrescent.

There had been a slight cough for several days; it now became paroxysmal exactly resembling whooping cough, with sharp inspiration and crowing, followed by vomiting or gagging; there had been a great deal of whooping cough in the neighborhood, so that two doses of vaccine were given at 48-hour intervals. The vaccine was made by washing strains of killed bacilli with salt solution. This treatment seen in the light of subsequent events, although not harmful, not being a serum, was unnecessary as the cough was due to urticaria of the laryngeal mucous membrane.

Intestinal lavage of two quarts of soda bicarb. solution was done in the evening and following morning. These relieved the thirst somewhat, but all soda solution (teaspoonful to a glass of water) and teaspoonful doses of milk of magnesia were vomited.

Soda bicarb. solution was then injected into the rectum every four to six hours, four ounces at a time, introducing the catheter eight or nine inches. Everything by mouth was stopped.

The rectal temperature remained normal, the pulse averaged 140, but the respirations climbed to 80 a minute the third night when the air hunger was most marked, the panting and sighing continuing through the long hot night. The stools became foul, loose, green, and full of mucus.

The urine had a strong ammoniacal odor, and at first contained acetone and diacetic acid in large amounts. It scalded the sensitive skin, which already showed transient patches of urticaria; the skin emanated a putrescent odor and was of a purple mottled hue at times; there was a violet color under the eyes and the extremities were cold. Although weak and listless, she was extremely sensitive to all noises and instantly became alert to adventitious sounds.

Since Tuesday morning no food had passed her lips; but Sunday morning, after refusing water, soda bicarb. water, barley-water, and a weak malted milk solution from cup and spoon,—even gagging—when the malted milk was offered her in her bottle, she gave a glad little cry, grabbed the bottle, devoured the half ounce and cried loudly for more.

She had lost one pound in five days. Convalescence was rapid. She was gradually worked back onto skimmed cow's milk with cereal diluents as before, avoiding eggs, oatmeal, cream and orange juice. Although a little color appeared in her cheeks, there was a background of marble white, violet circles under her eyes, and no gain in weight at all during July and August. She had some urticaria rarely and a little eczema

It was at this time that the writer succeeded in getting a good Toggenberg goat from the mother of a 19 months old baby, who had just gotten back onto cow's milk; in this case the mother had three-week attacks of rheumatism every year; when her baby was four months, she attempted to give him a few mouthfuls of cow's milk. This was followed by urticaria, asthma, much mucous discharge and a temperature of 101 to 103; a diagnosis of measles had been given. When the baby was 10 months old the writer was asked to superintend its weaning from the breast; a few drops of very weak modified milk feeding precipitated an attack of croup, followed by asthma in which air hunger, cyanosis and mucus were so severe that the mother was fearful of her baby's life; patches of urticaria broke out all over the body, leaving practically no area of skin unaffected; this was controlled by adrenalin chloride, two minims hypodermically, loosening the clothes around the neck, and placing the baby's face downward to allow the mucus to run out; boiled milk, buttermilk or Nestle's Food, in which the protein had been desensitized were not tried. At Dr. John Morse's suggestion, the baby was put onto goat's milk without any difficulty and at 19 months was able to go onto cow's milk without showing any anaphylaxis to it.

On September first, Darthea M.'s cow's milk was changed to this goat's milk and the picture entirely changed. Even 24 hours showed a marked difference:—her color rapidly improved. she gained four ounces the first week, 15 ounces the second, and five ounces the third. Then four molar teeth appeared. She caught her first cold when taken on a 40-mile auto ride on a balmy day. The stools then became costive and showed fat indigestion from the 7.1% fat contained in the goat's milk before dilution.

So imperial granum, cream of wheat, and barley gruels were again called into service as diluents, and another explosion of vomiting for five days was precipitated. Her thirst was practically negligible this time and her strength better maintained by giving absolutely nothing by mouth; a daily cleansing enema of a quart of soda bicarb. solution (tablespoonful to the pint) was given and four ounces of a 5% solution of Merck's dextrose were introduced eight inches into the rectum every four hours. Convalescence was again rapid and the hunger so extreme it was difficult to appease it without overfeeding.

As the cream does not rise on goat's milk after standing, there were only three ways to reduce the 7% fat. One was to send to the goat farm for a doe just kidded, whose milk by analysis showed 3.90% fat, and 13.50% total solids; another was to buy a DeLaval cream separator (at $57.00); the third, to dilute the milk and add dextri-maltrose to bring up the caloric needs, as these babies handle malt sugar better than cane sugar; but as the dextrimaltrose is made from wheat, it had to be omitted in this case.

On the advice of an old classmate, Dr. William W. Howell, the baby was taken to Dr. John Turnbull, the second week in October, to ascertain to what proteins she was sensitive. He found she reacted to wheat, oatmeal, orange, chicken, potato, corn, and rice. She showed only a light delayed reaction to cow's milk, so one feeding of cow's milk and three of goat's milk were given daily, as the goat gave less than a quart a day at that time. She also took scraped beef, beef juice, barley, gluten toasted bread, eggs, broths, and prune juice. She gained in weight until the first week of December, when as she again approached her three months' cycle limit, she began to have urticaria, scalding from the urine with an ammoniacal odor, foul breath, violet circles under her eyes, stationary and even loss in weight. Dr. Turnbull again did 25 skin tests and found the same results except a more marked sensitiveness to cow's milk and no reaction to rice. As the gluten flour contained only 40% gluten, she reacted to that and it was decided to omit the bread from her diet and try to find some bread made from pure rice flour from Battlecreek, or grind our own flour from pure rice grains in the coffee-grinder. Cow's milk was entirely omitted. At the same time, Dr. Morse gave the baby a careful physical examination and found her normal in every way for her age; he also found the urine normal, as well as the stools, to ordinary tests, the latter not showing any fat indigestion.

On December 16, the following communication was received from Dr. Stansfield:—

"I think the best way to head off any impending attack would be to follow closely the acid excretion. That could be done by obtainin the morning urine, after the night's fast, and before her first meal. We could determine the total acid body excretion, its partition and the ammonia coefficient. These would give us warning of any impending attack, provided the attack did not have an exceedingly rapid onset. Any untoward behavior could be made an indication for reëxamination. Repetitions of examination could be done as often as you could collect specimens.

"The Alkali Tolerance test would be useful in case she presented any untoward symptoms. Furthermore, the alkali would be of benefit if there was an acidosis.

"Blood examination would not give any additional information to the above.

"I have thought that perhaps your patient is sensitive to cow's milk. Was this tried with other tests?

"Another possible lead is the fact that eczema in infants is often due to the protein sensitiveness—almost always where several proteins are at fault. The recurrent attacks may be anaphylactic in nature, rather than due to ketone acidosis. Repeated and many examinations would probably solve this question.

"Have you considered desensitizing by arbitrarily selecting what seems to be the protein chiefly offending, and given small amounts, gradually increased,—by mouth?

"I have written at this length as I realize your difficulty and desire to give you what help I can."

On December 22, as she had almost reached the end of her three months cycle, and had many evidences of acid intoxication, a specimen of the morning urine was submitted to Dr. Stansfield to determine whether 30 grains of soda bicarb. daily were sufficient. He found that the ammonia nitrogen was 18.8% of the total nitrogen, the maximum limit being 12½%; acetone and diacetic acid were in excess. He telephoned that she was on the verge of another attack of recurrent vomiting and to push up the soda bicarb. to sufficient amount to rapidly make the urine alkaline. Eighty grains a day were given, her caloric intake reduced, milk of magnesia given in much water, and her symptoms rapidly ameliorated. She vomited only once and a small amount.

On December 28, the ammonia nitrogen was 12.3%, or the normal high limit. The urine was alkaline in reaction. The soda was reduced to 20 grains a day and omitted January 6, with the reaction neutral, and the ammonia nitrogen 1.8%, acetone and diacetic acid still positive. On January 13, the ammonia nitrogen was again quite normal.

Specimen of December 22, 1919, in detail:—

Titrable Acid (*i.e.,* acid neutralizable with standard alkali) 38.0 cc. per 100 cc. urine. Total acid excretion, 73.0 cc (comprises titrable acid plus ammonia). *Titrable Acid + Ammonia* = 1.08%. This figure is probably normal for a baby. The ratio is used as an index of inorganic phosphate retention, such as occurs in the acidosis of nephritis. *Total Phosphates,* 0.19 gm. $P_2 O_5$ 71% of titrable acid. *Total Nitrogen,* 0.20 gm. per 100 cc. *Ammonia Nitrogen,* 18.8% total nitrogen.

The total acid excretions of the phosphates show nothing but were determined for the future comparisons.

The ammonia per cent. of the total nitrogen is high (normal high limit 10-12%). This indicates that ammonia is being formed under stress to neutralize an excess of acid, hence its significance as an index of acidosis.

Specimen of December 28, 1919:—

Urine Alkaline (due to carbonates). Ferric chloride reaction positive. Nitro prussid reaction positive. Total nitrogen, 1.54 gm. per 100 cc. Ammonia nitrogen, 0.19 gm. per 100 cc. 12.3%.

It was obviously impossible to determine the acid factors in this specimen. The ammonia per cent. has dropped considerably to about the normal high limit. The ferric chloride and nitro prussid reactions are positive, most probably being due to diacetic acid neutralized by the alkali administered and so excreted. The kidneys cannot excrete uncombined acid. The presence of this body indicates that disturbance of acid base equilibrium, due to disordered fat metabolism, was at fault.

Specimen of January 1, 1920:—

Urine feebly acid in reaction. Total nitrogen, 0.67 gm. per 100 cc. Ammonia nitrogen. 0.016 gm. per 100 cc. 2.3% of total.

Acetone, negative; diacetic acid, negative; albumin, negative; sugar, negative. Microscopically, a few epithelial (squamous) cells and urate crystals.

Dr. J. P. Crozer Griffith, of Philadelphia, in his two new volumes of pediatrics, just out, ably sums up recurrent vomiting as "a toxic neurosis occurring in those especially predisposed to it, and that the outbreak depends on the gradual heaping up in the system of a poison of a nature as yet undetermined: yet it may be an acid arising possibly in the digestive tract or more probably in disordered metabolic processes and that inability to assimilate the fat in the diet is the direct cause in many instances. That some poison is at work is certainly indicated by the degenerative changes in the kidneys and other internal organs sometimes found in fatal cases. It is distinctly a disease of private practice only."

Dr. Griffith was kind enough to explain some of the symptoms as shown by Darthea M. in the following résumé:—

"The case of your little patient is certainly a very puzzling one. The tendency to eczema which is shown suggests a certain development of exudative diathesis,—just the kind of a case which, as time passed, would be followed by asthmatic manifestations. It seems to me that that much is very certain. This diathesis must give her a predisposition to urticaria, eczema, and asthma, entirely independent of any anaphylactic reaction. I do not mean that she has no anaphylaxis for cow's milk, because it seems most probable that she has; but I mean that it is perfectly possible for her to develop these symptoms from the autointoxication of an attack of indigestion, irrespective of anaphylaxis, and on account of the diathesis referred to. It may be that this baby has an anaphylactic reaction to milk of any kind, and if that is so, the only thing to do is to try to get along without it. It seems to me, however, that we are working a little in the dark, and that the wise thing to do would be to test this child's skin reaction to various proteins, and see just what could be safely given her from the point of view of her anaphylaxis. On the other hand, she clearly has her attacks brought on, or at least preceded by digestive disturbances, and from this point of view one must regard her as an instance of chronic intestinal indigestion, with various complicating manifestations. All this, of course, is important in the way of treatment.

"Taking up some of your questions, I would say that I do not believe the cold which she took, or the eruption of the teeth would account in any way for her toxic attack. I think I would continue the soda for the present, the dosage which you are using being sufficient, unless symptoms of acidosis appear, when, of course, a much larger amount would be necessary. I do not believe that anything is to be gained by giving aspirin or sodium salicylate. It has impressed me throughout the whole of your letter that the 'whooping cough' was not whooping cough, but a condition associated with urticaria of the mucous membranes. That attack seems to me to have been certainly anaphylactic. It does not appear to me from your letter that the baby was any worse after the serum injections than before them. I do not believe that they played a very important part, although of course about this, one cannot be certain. As to the question about the effect of acid fruit-juices, oatmeal, beef juice, and the like, I am entirely uncertain in my own mind. I would certainly try all these things by cutaneous reactions. As to the length of time that the sensitiveness to cow's milk will continue, I do not think there is any very definite knowledge. This is because cases that are undoubted instances of intolerance to cow's milk are not at all common; in my own experience quite uncommon, although I have seen a great many which have been called that. I would not try her with any cow's milk for a good many months, if you can help it, and then to begin with exceedingly minute doses, given every day, and steadily increased in amount. It is important, I think, in such cases, to give the small doses frequently, and continue this in order to establish tolerance. Whenever the baby gets an attack of disturbed digestion, with or without the other symptoms, I would take her right off of milk, as you have done, purge her thoroughly, give her barley water, glucose, or some substance, and give particular attention to maintain the moisture of her tissues by the administration of liquid in some way, even if it has to be by the skin or intraperitoneally. This, I notice, is what you have been doing already. You are giving her broths and scraped meat already, which looks as though she were tolerant for meat proteins, and I do not see why we cannot get sufficient protein material by giving her meat in increased amount, and depending on various cereals for carbohydrates. Of oatmeal, however, I am a little more suspicious than I am of some of the others.

"If you need any help in the matter of anaphylactic reactions, and advice upon this point, there is no one I know who can give it to you better than Dr. Fritz B. Talbot of Boston. He and Dr. Schloss of New York have done more in that line than anybody else I know."

When the new Sannen goat with milk containing 3.90% fat was substituted for the Toggenberg goat, with 7.10%, and all protein to which she was sensitive was eliminated from the diet, Darthea M. not only passed her third cycle successfully, but again became a ruddy-cheeked normal baby. She had a long out-of-door morning nap and spent her afternoons warmly dressed on the veranda in her play-yard.

However, by February 1, 1920, she had not shown a consistent gain in weight, being about a pound under weight. Then, too, there was an occasional suggestion of *fetor-ex-ore*, a fine urticarial rash, dark circles under her eyes, an urticarial cough; all this in spite of a normal daily regular stool.

As both Dr. Morse and Dr. Griffith had suggested having Dr. Fritz Talbot interpret the significance of the skin reactions and working out the problems of metabolism, the baby was taken to Boston on February 4, where Dr. Talbot made a thorough examination of the baby, her urine, and her feces. He found evidence of fat indigestion microscopically in the latter, but did not place much importance on the skin reactions as her skin was so sensitive to any trauma that even the control showed some reaction in the way of redness but no urticarial wheal.

Dr. Talbot mapped out the following treatment:—

"Add one Hynson and Westcott lactic acid tablet three times a day to a milk feeding.

"Continue the goat's milk. Get a supply of condensed goat's milk from Walker-Gordon for emergency. (This can be obtained wholesale from California.) Do not start cow's milk until baby begins to gain, and then increase only a drop daily, the principle being to increase a small amount often to desensitize, and to increase at long intervals of ten days or two weeks to render individuals more sensitive to a certain protein.

"Give 25 grains of fused-calcium-chloride three times a day, well diluted, for one week. (Blood calcium will last for two months.) If you cannot get fused-calcium-chloride give 25 grains calcium-lactate for two weeks.

"Work out dextri-maltose gradually, using cane sugar instead.

"Cook foods thoroughly, not necessarily a long time, but use the greatest heat, *e.g.*, baked custard better than boiled, or bread baked and toasted, too.

"Of the meats, lamb and beef can be used as before. Beechnut bacon is good in small amounts, gradually increasing. If bacon goes well, give a very little ham; the German hams from a delicatessen store are best, as recurrent vomiting is unknown in Germany where these hams are used; slice very thin, working up gradually, taking three months to get up to a teaspoonful of any kind of these meats.

"The skin reaction to spinach is not conclusive; but start with only a teaspoonful; later, use string beans and purée of peas put through a sieve; take one month or six weeks to work up to two teaspoonfuls. Give each vegetable every second or third day two weeks. Try the hearts of boiled onions in minute amounts; also cauliflower—all vegetables to be put through a sieve.

"Home-made preserved pears and peaches do not contain the thick syrup that the bought variety do, and the juice is preferable. Prune juice and prune pulp are good.

"Use Japanese rice wafers made of pure rice flour, Kasava bean flour wafers. When two years old, change from one cereal grain to another.

"For the attack, give 1/360 grain of atropine, repeated in two hours; one minim of adrenalin chloride on the back of the tongue; a teaspoonful of soda."

Fused calcium-chloride was so noxious to the taste, even diluted, that the calcium lactate treatment was substituted. The Japanese rice wafers are not now obtainable at S. S. Pierce's; the American substitute contains some wheat flour. The Kasava wafers are not agreeable, being very flat and tasteless.

However, on her limited diet, Darthea M., seven months after her last attack, is now perfectly well, and is normal in weight for her age, in spite of the vicissitudes through which she has passed. It has not been necessary to remove either her tonsils or her appendix, but only to follow out Dr. Fritz Talbot's invaluable suggestions given above, taking advantage of the information given by Dr. Turnbull's protein skin tests, and to have Dr. Oliver Stansfield's watchful eye on the urine when the symptoms suggested a recurrence.

The writer's cases were all first born, or only children of neurotic parents (professional men, newspaper men, manufacturers, trained nurses, etc.) or people undergoing continual mental strain coincidental with an indoor life and little relaxation. The mothers were almost without exception of extremely nervous temperaments, although they made brave efforts not to show it; many of the babies came late in married life. The common age was from 10 to 20 months; however, the age may extend even to ten years.

Another striking characteristic of those precocious infants and children was the vice of a lithemic or rheumatic inheritance to live down. Some near relative, usually father or mother, or both, gave a history of rheumatism in some form,—articular, muscular, sciatic, rheumatic fever, asthma, hay fever, eczema, urticaria, multiple furunculosis, or carbunculosis.

Frequently the history is obtained of the mother having had impaired renal function during the latter part of pregnancy extending into parturition or the early nursing period.

In a recent case of a little girl of four on whom Dr. Turnbull did the protein skin tests, the mother has diabetes mellitus.

These babies have a defective sugar or fat metabolism or are more or less sensitive to certain food proteins such as those in eggs, cow's milk, wheat, oats, acid fruits, potato, rice, chicken, etc. As goat's milk is not as common a food as cow's milk, and the parents not having used goat's milk, there are less chances of sensitization. Since the protein in Nestle's Food has been desensitized this may be used as a temporary expediency in the strength of five tablespoonsful to twenty ounces of water.

The attacks may be due to giving excessive fat, with resulting abnormal acids and diminished alkali bases in the blood stream. Or, as in the writer's cases there has been little relationship to diet, most of the little patients have been fed most carefully and by painstaking mothers, fearful of dietetic errors; the attacks strike an apparently well baby out of a clear sky, the stools being at first macroscopically normal in appearance.

However, there is usually some match that sets off the powder keg, quite ready to explode anyway,—such as dentition, acute cold, constipation, too long an auto ride, or most any slight acute febrile disorder.

Whether the increasing frequency observed in Worcester of this type of acidosis is due to the effect produced on parents by the many frets, worries and difficult problems arising out of the Great War and the H. C. L., or whether it is due to the very rich milk most of these babies have been taking, because quite the majority have been on certified milk testing at least four per cent. fat, whereas the common family pasteurized milk of the same producers is from black and white Holsteins where the fat is around 3.5%, both of these causes doubtless play a part.

Babies and children of a neurotic ancestry and of lithemic diathesis tend to periodic attacks of vomiting. This is due to disordered fat and carbohydrate metabolism, as well as to sensitization to certain definite food proteins to be found out by skin reactions, or even more important, to experimentation with the foods themselves.

The best way to meet the attacks is by stopping everything by mouth and by giving one or two cleansing irrigations daily of soda bicarb.; and glucose or dextrose in solution by rectum; for the interval, elimination from the diet of all proteins to which the baby is sensitive until the baby desensitizes itself, or is desensitized; also a low fat and sugar intake.

It is essential, when nearing the cycle, or when the slightest symptoms recur, to watch, or, better still, to have the urine closely watched by a physiochemist, so at the first warning, a sufficient quantity of soda bicarb. may be given to neutralize the urine or to render it alkaline.

It is important that these precocious children have long hours of sleep, and play alone out of doors as much as possible.

Dr. John Watson, of Anderson, S. C., informed the writer at Dr. Maynard Ladd's clinic last week, that out of nine appendectomies done in Baltimore on infants with recurrent vomiting he was told seven had no recurrence; the evidence for operating came from x-ray studies of the appendix and intestines. In answer to a letter of inquiry, Dr. John Howland, pediatrician-in-chief to Johns Hopkins, has just sent me the following letter:

"I have never believed that true recurrent vomiting was caused by a disease of the appendix. I have never studied cases of recurrent vomiting by means of x-ray pictures of the intestines, and I don't know that appendectomy gives complete or permanent relief."

PREVENTIVE MEDICINE AS APPLIED TO THE INDIVIDUAL.

By J. P. Bill, M.D., Dr. P.H., Boston.

Preventive medicine shows in its history several successive stages. As first applied, it was desired to ward off the introduction of certain communicable diseases into the country. The idea later broadened to prevent the incidence of other diseases in the state. With further development of the subject, the city received attention, and finally the so-called rural districts. The mechanism for preventing disease is such that groups of individuals have been protected by other groups of specialists, highly trained to conserve the public health. By the latter group the individual has been indirectly affected, for if the chances for the spread of disease be minimized, the greater number of people will obviously remain well. There still remains the individual as a problem in preventive medicine.

That problem is best solved by the individual physician rather than by the public health officials, because of the personal equation, and for other reasons. This article is an answer to several inquiries as to "the kind of patient," and "what to do for him."

In order to understand more clearly the type of patient, a classification of disease sometimes encountered is helpful. In it, for convenience, diseases are divided into those which are

1. Communicable, as tuberculosis;
2. Occupational, as aniline poisoning, and
3. Functional or organic, as diabetis.

Classes 1 and 2 are termed preventable inasmuch as the environment of the individual can be so controlled as to prevent his becoming affected by them. By the accepted methods of quarantine, dust removal, etc., functional disturbances cannot be controlled. Moreover, by these measures the personal element is entirely lacking. The patient troubled with *dis—ease* can be helped by preventive medicine through comparatively simple measures.

Every physician encounters cases whose symptoms may suggest a known clinical condition, but in whom the accepted tests together with the diagnostic signs and symptoms lead but into a blind alley. Many of these cases have been driven from pillar to post seeking relief without success. Their functional disturbance continues to manifest itself until, pitifully enough, organic changes occur, or the individual is actually incapacitated and the *dis—ease* has become *disease*. The condition then automatically leaves the realm of preventive medicine for that of curative.

One of the outstanding features of this kind of work is the apparently complete lack of "perfection" in man or woman. As individuals are examined one or more defects either functional or hygienic, manifest themselves. It may be said in fact that from the standpoint of preventive medicine, perfection in the individual is impossible of attainment. The reasons for this absence of the "ideal" are many. The following are a few of them.

1. Faulty intrauterine development.
2. Dietary indiscretions in infancy or maturity.
3. After effects of communicable disease.
4. Faulty development to and after puberty.
5. Familiar tendencies toward body weaknesses.
6. Lack of proper exercise.
7. Faulty posture.
8. Faulty daily habits.
9. Faulty musculature.
10. Endocrinopathic conditions.
11. Mental states; worry.
12. Lack of recreation.

There is always the possibility of faulty intrauterine development. The factors responsible for this condition are without the possibility of discussion in an article of this kind, nor, indeed, are many of them known. Some of the results of such faulty development may be remedied by surgical or other means. By far the larger number of patients, however, must be accepted as so many imperfectly designed machines and their functional limits determined and pointed out. The application of eugenics to succeeding generations will undoubtedly do much to lessen the number of those who are physically or functionally handicapped at birth.

Another problem entering very largely into the question is that of dietary and other hygienic indiscretions in infancy and childhood. Not the least important phase of the problem at this stage of bodily development is infant feeding.

With the growth of the child comes the period of school life. In the past parents and physicians were wont to regard the "children's diseases" as necessary evils, and indeed there are those today who still maintain this faulty position. The idea that one's child "may as well have the measles and get them over with" is a deplorably incorrect one and is still existant. The more conservative attitude is to assume that all diseases, irrespective of kind, may actually do permanent damage. In many individuals as seen at the present time, therefore, the after effects of communicable disease in childhood may well be suspected of being at least partly responsible for bodily disfunction.

A young and growing human body, like that of a plant, is susceptible to considerable moulding both in posture and habit. Faulty training in youth is in both subjects bound to leave its mark at maturity. Too close attention to books on the part of the school child, or too close application to work in the industries in the early decades of life, will have its effect in later years. For example, the very number of types of school desks and chairs shows that, while the idea has been before the attention of school hygienists for some time, this particular problem affecting the maturing child has not been satisfactorily solved. Again, many children have mentalities which fit them for a consistent mental development along with that of their schoolmates. Their bodies, however, may not be sufficiently sturdy to develop concomitantly. We are all familiar with the child who "had to stay out of school a year because he wasn't strong enough to continue."

Closely related to the above is the hereditary or familiar tendency toward bodily weakness. The broader viewpoint is to assure that, just as it has been shown that a familiar tendency toward tuberculosis may be inherited, so may a tendency toward faulty endocrine activity, toward "weak heart," or poor eyesight, or any one or more of a dozen other bodily weaknesses.

Perhaps the most striking one single factor manifesting itself to the student of the subject is the result of a lack of proper exercise. This is just as true with the housewife or child as it is with the professional or business man of sedentary habits. Many there are who, with the means at their disposal or through the wisdom of experience, resort with delight to horseback riding or golf, with the fond idea that they are getting sufficient exercise, when the examination will disclose a badly relaxed abdominal wall with its accompanying train of varied digestive disorders. Further careful inquiry into the patient's life will show evidence of faulty diet, posture and daily habits, correction of which will make, in frequent instances, for a profound change for the better in his condition.

Another factor is worry. Irrespective of whether the patient is shunted from his rut of worry by direct suggestion, autosuggestion, or downright bullying, he cannot be long kept from sliding into it again, unless his body functions be brought back more nearly to normal. A healthy body makes for a healthy mind and vice versa. Until body processes be favored toward normality, abnormal mental processes or lines of thought stand a good chance of remaining *in statu quo*.

Disturbances in the ductless glands may occur at any period of life. So little is known about their interrelation that but little can be done at present to affect them directly, and but little more through such means as a proper daily regimen. To those suffering from ductless gland disfunction as well as with certain mental conditions, medicine, preventive or otherwise, has little to offer.

The term "normal" as applied to the individual is capable of varied interpretation. Perhaps most of us associate it in synonymy with the word "well." Both are possible of a wide variety of definitive detail. Certainly to the physician of average training a normal person is a well one. We will do well to keep in mind that health or at least well being is possible though the body be far from ideal in function or makeup. Normality rather than being represented by a sharply drawn average on each side of which individuals are classified, should be thought of as a zone wide enough to include the adult, short of stature, of slight muscular build and demanding but little food, as well as the person who tends to corpulency, who is possessed of a huge framework, and who eats considerable food. As well try to make either type into the other extreme, as to gauge either according to the standards of ideal weight or height and other expressions of the so-called average. Each type is distinct, and providing their body functions are within proper limits, each type can be considered a "well" individual.

The limits of functional and emotional activity consistent with health are broad. Continued recourse to heavy diet, for example, on the part of an adult of sedentary habit will very likely show results not found in an individual who earns through use of his muscles. The latter, too, may use his arms and legs at his work, and need only exercises to strengthen his abdominal muscles, while the former may need, in addition, exercises to strengthen other parts of the body. The latter's change in environment in doing his work may provide sufficient to serve as relaxation, while the former may find it necessary to shorten his business hours in favor of recreation. Blanket dicta for all persons will not produce the desired state of well being. The needs of each particular individual will be apparent only through individual study.

All medical students from the time of their matriculation have their attention directed to pathological conditions. They are taught disease, its pathology, symptomatology and treatment. No attention is paid to conditions of dis—ease, where organs may be pathologically negative, though abnormally functioning. What the physician learns of personal hygiene and its effect on disfunction is usually acquired after he has graduated.

As I look back over the limitations of my own training along this line, I can see in the light of my present experience a decided need for instruction in regard to normality and its limits, in the essentials of dietetics, in the physiology and forms of exercise, and in the functional effects of faulty posture from the standpoint of the internist rather than that of the orthopedic surgeon. All of these, together with the principles of proper daily habits, are at present left to the physician to pick up as best he can.

The above represents in a general way the type of material presented to the student of individual preventive medicine, as well as some of the problems as I see them.

The next point is how to find out the individual needs. Two lines of study are necessary. The first is the customary physical examination. The custom of many practitioners is to let alone organs or systems not clamoring symptomatically for attention. I have found it best to adopt as a routine on every patient a thorough examination, for by it are discovered many pertinent facts bearing on the patient's condition which would otherwise be missed. I use a printed form in order that nothing may be forgotten. On it are sections referring to various systems and organs in the body, each qualified by printed adjectives in such a way that a simple underscore or other mark will tell the most complete story in the shortest time. Even so, an examination of this sort never takes less than an hour. If a question arises in regard to cancerosis, a gynecological condition, or dental pus pockets, for example, the patient is referred to a recognized specialist for diagnosis and report, or for correction. In this respect the patient derives the benefit of so-called group study if it be necessary. The examination is as complete as possible in regard to both physical as well as clinico-pathological findings. Laboratory tests are confined to those of practical value, though special determinations are made as they appear necessary.

The second is a printed sheet of questions inquiring into the details of the patient's daily habits in regard to food, drink, exercise, and other matters. This is filled out by the patient. When both are complete, and urine and other samples have been examined, the examiner is in a fair way to determine what factors are probably responsible for the patient's being below par.

Instruction rather than advice is then given, based on the patient's records. The work is largely educational in character, for I have found a much greater degree of intelligent coöperation providing the mechanism responsible be explained. Moreover, without this educational feature I found it more difficult to boost the patient mentally from the minor cadence of illness and hopelessness into the dominant major of a will to get well and stay well. At this time or a little later, then, all the various factors of diet, posture, exercise, etc., are successively explained, together with my interpretation of the patient's limitations so far as body functions are concerned.

I ask patients to feel free to use the telephone or a letter in event of any question needing help for solution. It has been found that this procedure is useful in clearing up minor but important points for which a visit is unnecesary. The patient in addition feels that some one is continually backing him in his fight back to well-being.

A few weeks after the examination, the patient is told to come in for supervision, after which, in most cases, visits once or twice a year tend to keep him along the proper road. Frequently he is told to report annually for reëxamination, by which a better check is kept on his or her body tendencies. He is instructed that in cases of any acute condition, he must consult his family physician.

In the industries this type of medical work has its analogy in efficiency engineering. Machines receive a periodical inspection and overhauling. Their rate of most efficient production is carefully determined. No machine ever constructed ever suffered the fate of the one-hoss shay. Invariably one or more parts show definite signs of wear and tear. An obviously weakened part, to the careful operator, means cautious use of that machine till the wornout member can be replaced. The human machine, on the other hand, must keep on running despite its weakened component. By tutoring the individual in the limitations of his own mechanism, a breakdown can be prevented and dissolution deferred.

Constructive and corrective work therefore is done through the means of periodical inspection and personal instruction, along the lines of exercise, posture, diet, and daily habits. Any one of these topics presents a truly great range of possibilities for good. In the case of diet, *e.g.*, many cases are brought back to health through it alone. Meat to some people acts as a poison. Whether the cause be intestinal absorption, the presence of proteolytic bacteria or some other phase of protein digestion is beside the point. These individuals escape the heavy, morning-after effects by substituting almost entirely some other form of nitrogenous food in their diet. Again, the question of ubiquitous constipation cannot be solved by entirely disregarding diet.

In their sex lives, patients show an appalling amount of ignorance not only in regard to the venereal diseases and their effects, but because of the familiar ostrich-like attitude of parents. The marital unhappiness due to this one factor alone is striking, as is well known to those who have made the sex question a study.

The effect of posture on visceroptosis and its attendant ills of pelvic and intestinal disfunctioning is another field in which much constructive as well as corrective work can be done.

These are a few instances of the possibilities of preventive medicine for individual betterment.

It may be truly said that this phase of medical endeavor embraces all ages and walks of life. Its possible application commences even before the birth of the individual—with the prospective mother. Many physicians follow the kidney activity of the mother, attend delivery, and shortly cease their efforts. After the birth the mother can receive distinct benefit from instruction directed toward restoring tone to the relaxed abdominal wall, while problems are encountered in infant life which may be cleared up to the advantage of both mother and child.

Much depends on sturdy development in the first few years of life, and the number of families who make a mess of things because of half knowledge is worthy of comment. Instruction with regard to minimizing contact with the communicable diseases of childhood, so far as possible, also serves a useful purpose. The child's even development in school and sex hygiene have already been mentioned.

Frequently people about to be married present themselves for examination.

In adult life, man usually applies himself to his work with considerable diligence. Woman, on the other hand, leaves her premarriage occupations and diversions and finds that her matronly duties require most of her time. In either event too much attention is usually given to the business in hand, and in most cases very little to the physicism enabling that business to be a success. We all know the business man who has directed all his efforts to his work, who has applied efficiency methods throughout his office or factory, and who in after years realizes that he has not the driving power with which he was blessed in his younger days. To this man and to the woman buried in her family duties life holds but little of enjoyment. They are not 100% efficient so far as their own body machines are concerned. Tonics and other medicines in a majority of these cases bring about no permanent change. A thorough overhauling and inspection, from crown to toe, and from morning until the next morning, are necessary before the physician is in a position to understand the trend of body function and to advise intelligently. Diagnoses, as we now accept the word, are impossible to make. In most instances functional derangement will have been found, for which as yet there is no name which will recall that particular physical picture in its entirety. Verily, had preventive medicine been applied to the individual years ago, Osler would not have made the remark credited to him.

In old age, where so frequently one function slows up to the ultimate upheaval of others, an inquiry of this sort helps greatly to restore peace of mind as well as well being. It is apparent, then, that this field of activity for preventive medicine is unlimited by sex, age, or vocation. Truly, the term "family physician" acquires a new meaning in its light.

It may be argued that few people are intelligent enough to think of these things, but in my experience the wisdom of being told how to live and to be put in a position to enjoy life is as much appreciated by the day laborer as it is by the president of the company that hires him. The value of this line of work is as much appreciated by the parents of a sickly five-year-old child as it is by the septuagenarian.

There are, to be sure, people who believe it folly to be wise. I can think of two women to whom the word cancer called to mind a hideous picture. One had a lump in one breast, while the other had a suspicious discharge. Neither of their husbands could get them to undergo examination by specialists. As a result, one is dead at an early age of a widely disseminated mammary carcinoma, while the other is being tortured by a hopeless uterine neoplasm. However, people of such a turn of mind are very much in the minority, and I have been struck with the number of casual acquaintances to whom at once the wisdom of a periodic physical and hygienic examination appeals very strongly.

Through the efforts of our various agencies for health with their campaigns for public education, the number of individuals who appreciate the value of such supervision as I have outlined is daily increasing.

The success of my own endeavors leads me to believe that there is a decided need for specialists in this line.

THE QUESTION OF DRAINAGE IN CHOLECYSTECTOMY.*

By John T. Bottomley, M.D., F.A.C.S., Boston

This brief communication is presented as the forerunner of a more extensive future paper which will be based on a wider experience in the field under consideration. It is offered now because it represents the first results of a change made in my surgical practice and because I desire your comment on and criticism of the matter in question.

It will be granted, I assume, that where drainage is contraindicated or inadvisable its use is either harmful or unnecessary. For the past decade or two the tendency has been to limit or to do away entirely with the use of drainage in abdominal cases. We may cite as witnesses the facts that not a few surgeons now use no drainage after reasonably early operation for perforation of a gastric or duodenal ulcer, that many men no longer use drainage as a means of carrying off the serous effusion accompanying acute appendicitis and that many pelvic cases now go undrained which would certainly have been drained some years ago. Most of us older men can remember the days when abdominal drainage meant huge wads of gauze packing sticking out of the abdominal wounds and making necessary great suffering and often serious shock in their removal. To-day a split rubber tube carrying gauze, or a cigarette drain suffices in most instances. It is in the field of biliary surgery that we have made relatively little change in our methods of drainage. Crile, it is true, has called attention to the fact that it is not necessary to drain the common duct after the removal of stones, provided that one is sure that the duct is patent. "Why drain a drain?" he tersely puts it. His advice and example have led others at least to consider the advisability of keeping drains out of the common duct whenever that procedure seems wise, and I think it has seemed wise in a gradually increasing number of cases. Yet it is in the more simple and the less threatening part of the field of biliary surgery that the use of drainage has been continued almost without exception and without much change in method for many years. Occasionally a gall bladder was explored or a few stones removed from it and the gall bladder was closed at once. This practice, however, was so rare as to be almost negligible. I can see a good reason for its nonacceptance as a routine measure even in simple, uncomplicated cases, because a satisfactory exploration of the interior of the gall bladder is practically impossible without removing it and one fears to shut in the unknown which may, perhaps, be dangerous. However, it seems to me that in the matter of cholecystectomy we have held sacred for too long a time the need of drainage. I feel that in a very large number of these cases drainage either might be entirely dispensed with or might be provided for a far shorter time than was usually customary. Late in December I began to close many of my cholecystectomy cases tightly without drainage of any kind and it is the object of my brief communication this evening not only to call your attention to this practice but also to note its results. Of course, the disuse of drainage means careful dissection and separate ligation of the cystic duct and the cystic vessels and careful hemostasis applied to the bed of the gall-bladder in the liver. The cystic duct and the cystic artery have always been tied separately with No. 1 chromic catgut, the stump of the cystic duct has always been sterilized and its end protected by a tab of fat from the neighboring gastrohepatic omentum. The deep field of operation has usually been cleansed with gauze saturated with ether. The folds of peritoneum dissected off the gall bladder need not be sutured over the denuded area in the liver but may simply be laid on it. Slight oozing in the liver is controlled by hot packs applied temporarily or by laying omentum against the oozing surface. I have regarded moderate persistent oozing that I could not entirely control as a contraindication to the disuse of drainage; in such instances, drainage has been provided for a few hours (24-36). Cases, too, in which there has been a good deal of soiling from an apparently infected gall bladder should be protected by drainage.

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* Read at the meeting of The Boston Surgical Society, April 6, 1920.

In the last three months I have done fifteen cholecystectomies without providing drainage of any kind. One patient died; she was a fat, elderly woman, with a huge umbilical hernia which had been long incarcerated and had occasionally given rise to bothersome symptoms. In the course of the operation I found a contracted gall bladder full of stones and very adherent to the duodenum. I finished the operation for the umbilical hernia and then foolishly, through another incision, removed the gall bladder. There was an old perforation between the gall bladder and the duodenum which necessitated a suture of the duodenum. This patient died, probably of peritonitis, on the third day. The other fourteen cases were eminently successful from every point of view. In one case a small hematoma of the abdominal wall was opened at the end of the first week and healed immediately. In another case in which I did a cholecystectomy for a persistent sinus following a previous cholecystectomy, a little serum was evacuated from the top of the wound on the thirteenth day, though I drained the abdominal wall temporarily because of the presence of the sinus. These cholecystectomies were done for cholecystitis both acute and chronic, both with and without stones. In five other cases a cigarette drain or a bit of rubber dam was left in for 24 to 36 hours and then removed. These cases also did very well and the wounds healed kindly. These twenty cholecystectomies have been done with no drainage or one of short duration. There has been absolutely no leakage of bile and the convalescence has been very comfortable.

These cases represent exactly two-thirds of my biliary surgery during the time in which they occurred.

I was led to the adoption of this procedure by the fact that a good portion of my operative wounds in biliary surgery, especially in fat people, became somewhat infected after draining for several days and that some developed troublesome hernias after operation. It is almost impossible to keep clean a wound drained onto the skin. These wounds often become infected despite all care and a weak abdominal wall is the result.

I realize that twenty cases are far too small a number from which to draw a general conclusion I am working with an open mind and am just as willing to discontinue this practice, if I find I am subjecting patients to undue risk, as I am to continue it, if things go well. If the disuse of drainage is safe in most of the cases of cholecystectomy, certainly drainage should be done away with. As with all other things in surgery, the matter requires judgment; it requires judgment to know whether or not to drain after an operation for appendicitis. It is no different in the field of biliary surgery.

Medical Progress

REVIEW OF RECENT LITERATURE ON TUBERCULOSIS.

By John B. Hawes, M.D., Boston.

The amount of literature published during the past year or more on the general subject of tuberculosis is enormous. It is manifestly impossible to review or even to refer to each article on this subject. I have, therefore, confined myself to what appear to me to be the more important ones. These articles naturally fall into certain groups, chief among which are: (1) Tuberculosis and the War; (2) Tuberculosis and Influenza; (3) The Framingham Experiment; (4) The Tuberculosis Campaign, and (5) Miscellaneous Articles on Tuberculosis.

TUBERCULOSIS AND THE WAR.

Before we entered the war, alarming reports reached this country concerning the enormous amount of tuberculosis among the French troops and the distressing frequency of exacerbations of this disease due to war conditions. Bushnell (*J. A. M. A.*, June 18, 1918, Vol. LXX, No. 24, 1821), in a careful article, was among the first to point out the exaggeration in these statements. France apparently lost the services of nearly 80,000 men on account of a wrong diagnosis of tuberculosis. Miller (*Rev. of Tuberculosis*, August, 1919, Vol. III, No. 6) confirms Bushnell's statements and gives a clear picture of what the tuberculosis problem in Europe really amounts to. Hatfield (Boston M. & S. J., June 20, 1918, Vol. CLXXVIII, No. 25, 863) reviews this subject from the American viewpoint with special reference to the soldier rejected on account of this disease. Badnel & Mendes (*Policlin.*, May 26, 1918, Vol. XXV, No. 21, 492), and Maragliano (*Rif. Med.*, April 27, 1918, Vol. XXXIV, No. 17, 332) describe this subject as it appears among Italian troops.

Trudeau (*J. A. M. A.*, Sept. 7, 1918, Vol. LXXI, No. 10, 818), Matson (*N. Y. M. J.*, Aug. 3 and 10, 1918, Vol. CVIII, No. 5 and 6, 199 and 294), Otis (*Med. Res.*, July 13, 1918, Vol. XCIV, No. 2, 47), and Burns (*J. A. M. A.*, Aug. 3, 1918, Vol. LXXI, No. 5, 373) describe the methods employed in various American camps and cantonments for the examination of troops for tuberculosis and the diagnosis of this disease. Twitchell (*Southwest M.*, July, '19, Vol. II, No. 7, 6) reports favorably in regard to this problem. He finds that the quiescent lesion does not tend to become active under the conditions of army life in America. Fitz and Cunningham (*A. J. Med Sci.*, Sept., '19, Vol. CLVIII, No. 3, 328), on the other hand, report that tuberculosis was nearly three times as common among American as among British troops and that recurrences and flareups were very common among American troops shortly after going abroad. Elliott (*Rev. of Tub.*, Jan. '19, Vol. II, No. 11), discussing errors in diagnosis, again refers to the mistakes made by the French early in the war, stating that out of 86,000 troops discharged from the French army for tuberculosis, later examination showed only one-fifth to be really tuberculous. Stewart (*Am. Rev. of Tub.*, Vol. II, No. 6, Aug., '18), of the Ninette Sanatorium, Manitoba, likewise comments on this and reports that of the soldiers sent to his institution on account of tuberculosis, 28% were classed as non-tuberculous. Parfitt of Gravenhurst goes so far as to say that 40% of returned soldiers coming under his observation were non-tuberculous. In contrast to this, in its editorial comment (Aug. 30, '19, Vol. LXXIII, No. 9, 696) the *Journal of the American Medical Association* states that the War Risk Insurance Bureau has a record of more than 3,000 cases of tuberculosis out of a total of 7,103 disease cases under its care. Pritchard (*Miss. Valley M. J.*, Oct., '18, Vol. XXV, No. 10, 295) urges x-ray examination along with clinical in detecting tuberculosis in soldiers; Bissell (*Am. J. Roent.*, Oct., '18, No. 9, 468) likewise considers the x-ray of first importance. Matson (*J. A. M. A.*, June 28, '19), and Manton & Maingot (*Bull. de la Soc. Med. des Hosp.*, Oct. 11, '18, Vol. XLII, No. 28, 914) in sane articles point out the limitation of the x-ray in diagnosis of pulmonary tuberculosis. Hawes (Boston M. & S. J., Oct. 23, '19, Vol. CLXXXI, No. 17, 499) goes into the details of the army tuberculosis problem as it appears in Massachusetts and is of the opinion that the war problem is no different from the peace problem as far as tuberculosis is concerned and that the solution depends on early diagnosis, thoroughness and utilization of all available resources and particularly common sense. Baldwin, W. H., (*Rev. of Tub.*, Aug., '19, Vol. III, No. 6) summarizes the entire subject in an excellent article. From my own experiences in this subject as consultant in lung diseases to the Public Health Service in Massachusetts and from the large numbers of men seen either at the Massachusetts General Hospital, as well as privately, I should agree strongly with Elliott, Stewart, and Parfitt, quoted above, that errors in diagnosis are extremely common; that any abnormal pulmonary condition is apt to be called tuberculosis; that the effects of gassing, trench and barrack bronchitis and influenza are all often mistaken for and designated as tuberculosis.

TUBERCULOSIS AND INFLUENZA.

When the influenza epidemic first swept over this country in the fall of 1918, physicians everywhere, and particularly those whose practice dealt largely with pulmonary tuberculosis and other diseases of the lungs began raising the very pertinent and important question as to the effects of influenza on active and inactive tuberculosis. There were two opinions in regard to this,—one a small group who believed that tuberculosis patients possessed a degree of immunity against this new respiratory tract disease, and another,—a large group, who looked for (and who found) direful results among their lung cases who had influenza. Fishberg (*Rev. of Tub.*, Nov., '19, Vol. III, No. 9) was the champion of those holding the first viewpoint. He states as follows: "I have not met a single case of phthisis during the past year which could be ascribed to have followed influenza." "It is not to be considered as a reactivator of dormant tuberculous lesions." "Tuberculous processes in the lungs have not been observed to assume an acute or progressive course after an attack of influenza." "The pulmonary sequelae remaining after influenza are almost without exception non-tuberculous in character and do not require the treatment accorded to phthisical patients." These statements, quite characteristic of Fishberg, radical in the extreme, would be approved by practically no one at present. There were not a few, including myself, who were surprised at the fact that the incidence of influenza at state institutions for consumptives was vastly less than that in other institutions for non-tuberculous patients and who were still more pleasantly surprised at the excellent manner in which patients with pulmonary tuberculosis passed through severe attacks of influenza. (Hawes, *Clinics of North America*, April, 1919.) We felt that a wave of needless alarm was spreading over the country and that countless errors in diagnosis would be made and injustice done to innumerable patients should it be taken for granted that influenza necessarily reactivated and made worse a previously existing influenza. None of us, however, would for a minute agree with the extreme statements above quoted. Permin (*Ugeskr. of Laeger*, Oct. 31, '18, LXXX, No. 44, 1739) states that tuberculosis is aggravated by influenza; that the tuberculous patient must be kept away from this disease and that there will be an increase of tuberculosis following it. Berghoff (*Am. Rev. of Tub.* Aug., '19, Vol. III, No. 6) reports that 50% of his cases showed reactivation influenza; Stirelman (*N. Y. M. J.*, July 5, '19) found that influenza did remarkably little harm to the consumptives under his care; Tewksbury (*Am. Rev. of Tub.*, Aug., '19, Vol. III, No. 6), in his series of 64 cases feels that every one was lighted up by influenza; Anderson and Peters (*Am. Rev. of Tub.*, Aug., '19, Vol. III, No. 6) feel that tuberculosis patients have no immunity against influenza and that numerous exacerbations are due to it. Blasco (*Med. Ibera*, July 20, '18, IV, No. 37, 54) is of the opinion that nearly 50% of cases are made worse following influenza. Horman (*Southwest Med.*, Nov., '18, II, No. 11, 13), in his sanatorium had only a small number of influenza cases among his patients. This he attributes to the fact that tuberculous persons possess a certain immunity against this disease. Wilson (*Lancet*, Jan. 25, '19) speaks of post-influenzal hemoptysis and urges that while the patient should be followed closely, one should not be in too much of a hurry to call it tuberculosis. Recently I wrote personal letters to fifteen or twenty of the leading specialists in tuberculosis and diseases of the lungs in this country in regard to this matter. While there was a great diversity of opinion as to *how much* harm an attack of influenza did to a consumptive, there was a unanimity of opinion that it did harm and was in every case a serious complication. This is a sane way in which to regard it.

THE FRAMINGHAM COMMUNITY HEALTH AND TUBERCULOSIS DEMONSTRATION.

This experiment, or rather demonstration, now being carried on in Framingham, Massachusetts, is being conducted by the National Tuberculosis Association and financed by the Metropolitan Life Insurance Co. It aims to answer the following questions: 1. Is it possible to discover and to place under adequate medical, nursing and relief supervision all of the cases of tuberculosis, incipient and advanced, in a normal industrial community? 2. Is it possible to ascertain with some degree of definiteness the responsible social and economic factor in disease causation, including all types of morbidity, not only tuberculosis? 3. What is the most efficient utilization of the existing means available for the discovery and treatment of disease? 4. What percentage of theoretically preventable disease is practically preventable with the use of known but unused or at least uncoördinated instruments? 5. What is the best possible adjustment of social forces, existing or to be created, with the objects of the prevention of unnecessary disease and death?

The answer to these questions, as is evident at a glance, are of far reaching significance. What has been done to solve these problems with details of methods and means employed are described in detail by Dr. Armstrong, Executive Officer, and by Dr. Bartlett, Medical Director, as well as by the Committee of the National Association in charge, in the various articles, reports, bulletins, etc., listed below.

1. Armstrong, D. B. (Trans. 13th Meeting Nat'l Tub. Assoc.)
2. Armstrong, D. B. (Trans. 14th Meeting Nat'l Tub. Assoc.)
3. Armstrong, D. B. (*Jour. A. M. A.*, Nov. 2, '18, Vol. LXXI, p. 1459.)
4. Armstrong, D. B. (*Framingham Monograph*, No. 4, Nov., '18.)
5. Armstrong, D. B. (*Framingham Monograph*, No. 5, March, '19.)
6. Armstrong, D. B. (*Mod. Med.*, Nov., '19, p. 633.)
7. Armstrong, D. B. (*Bull. Nat'l Tub. Asso.*, July, '19, No. 10.)
8. Armstrong, D. B. (***Bull. Nat'l Tub. Asso.***, Oct., '19, No. 13.)

9. Armstrong, D. B. (*Bull. Nat'l Tub. Asso.*, Jan., '19, No. 4.)
10. Armstrong, D. B. (Boston Med. & Sur. Jour., Aug. 28, '19.)
11. Bartlett, P. C. (*Interstate Med. Jour.*, Vol. xxv, No. 7.)
12. Report of Com. on Appraisal, etc. (*Am. Rev. of Tub.*, Nov., '19, Vol. iii, No. 9.)

DIAGNOSIS.

Very little that is new has been added to our knowledge of diagnosis. The fundamental principles of taking nothing for granted, thoroughness, and not jumping at conclusions have been emphasized.

McCrae & Funk (*Jour. A. M. A.*, July, '19, lxxiii, No. 3, 161), out of 1,200 admissions for advanced tuberculosis found 6% to be non-tuberculous. Lack of thorough examinations and neglect of sputum tests are the chief causes of mistakes. Slade (*Monograph*, No. 19, Dept. Health, N. Y. City, Dec., '18) wisely emphasizes the fact that it is far more unjust to the patient to make an incorrect positive diagnosis than to make an incorrect negative one. His views follow closely the Standards for Diagnosis and Treatment adopted by the National Tuberculosis Association. Philibert (*Progr. Med.*, May 10, '19, 179) calls attention to three valuable tests: (1) Provoked expectoration by means of expectorants; (2) Injection of 50 cc. of normal salt solution and watch for a subsequent rise in temperature, two to eight hours later, and (3) Temperature after exercise. Ochsner (*Med. & Surg.*, Nov., '17, i, No. 9, 982) places first in diagnosis the physical examination; second, a careful history. In nearly 50% of cases x-ray examination gave no help. Nicholson & Goetsch (*Am. Rev. of Tub.*, April, '19, Vol. iii, No. 2) describe their test to differentiate early tuberculosis from hyperthyroidism. The test depends on the constitutional sensitiveness of the patient to adrenalin. If the condition is due to hyperthyroidism he will react to adrenalin, while in tuberculosis there will be no such reaction as shown by rise in blood pressure. This test is an important addition to our knowledge on this subject.

TREATMENT.

In treatment, as well as in diagnosis, nothing new has been added. Emphasis has been increasingly laid on prolonged rest and exercise, when taken, standardized and carefully regulated.

Schaefer (*Colorado Med.*, July, '19), Pottenger (*N. Y. Med. Jour.*, July 19, '19), Thompson (*So. Med. Jour.*, Feb., '19, xii, No. 2, 61), Kinghorn (*Am. Rev. of Tub.*, June, '19, Vol. iii, No. 4), Kahn (*Med. Res.*, Nov. 23, '18, xciv, No. 21, 899) describe and discuss this subject. Pneumothorax has its ardent adherents. Gammons (Boston Med. & Surg. Jour., clxxx, No. 19, 523) urges that it be not left to a last resort but that its use should be considered in every case. Stolkind (*Brit. Jour. Children's Dis.*, Jan. & Mar., '19, xvi, Nos. 181-183, 18) advised its use in children as well as in adults. Cicconardi (*Ref. Med.*, Feb. 22, '19, xxxv, No. 8, 130) urges its use for hemorrhage; Stirchman (*N. Y. Med. Jour.*, Feb. 1, '19, clx, No. 5, 187) warns of its dangers, while Parfitt and Crombe (*Am. Rev. of Tub.*, Sept., '19, Vol. iii, No. 7) and Shortle (*ibid*) discuss its advantages and disadvantages. Heliotherapy is coming into greater use as its value becomes known. Mills and Forster (*Am. Rev. of Tub.*, Jan., '19, Vol. ii, No. 11) describe use of condensed reflected sunlight in laryngeal tuberculosis with good results. Collin (*Ugeskr. f. Laeger*, Nov. 21, '18, lxxx, No. 47, 1841) describes its use for bone and joint tuberculosis; Blegvad, (*Ugeskr. f. Laeger*, Nov., '18, lxxx, No. 48, 1910) recommends it for laryngeal tuberculosis, either direct sunlight or Finsen rays being used. Sieria (*Med. Ibera*, Nov. 23, '18, v, No. 55, 183) calls attention to contraindications to its use, such as fever, heart disease, nervous disposition, tendency to hemorrhage and nephritis. Dixon (*Practitioner*, Dec., '18, ci, No. 6, 308) speaking in regard to sanatorium treatment, calls attention to the fact that it is simply one part of treatment and that it must not be blamed if, because of its effect alone, the death rate and care incidence do not fall. What he says is of the utmost importance. Rutledge and Crouch (*Am. Rev. of Tub.*, Feb., '19, Vol. ii, No. 121) present an excellent summary of their results with sanatorium treatment. The use of tuberculin in various forms of non-pulmonary tuberculosis continues to produce good results. As pointed out by Hawes (*Internat. Clinics*, i, Series 28) it is of the utmost importance to remember that tuberculin is only one factor, more or less important as the case may be. In tuberculous eye conditions, however, tuberculin seems to be of special value: of this I can bear willing testimony from numerous patients of my own, while Török (*Arch. Ophth.*, May, '19, XLVIII, No. 3, 242), Gardini (*Cronic. Med.*, Oct. 18, XXXV, No. 664, 293), and Paterson (*Am. Jour. Med. Sci.*, Feb., '19, CLVIII, No. 568, 198) confirm this opinion in regard to the treatment of tuberculous cervical adenitis. Hertz (*Ugeskr. f. Laeger*, Dec., '18, LXXX, No. 50, 1967) urges heliotherapy for this; Dufourmentel (*Presse. Med.*, Dec. 5, '18, No. 67-621) still believes surgery can produce the best results, while Abbot (*Am. Rev. of Tub.*, May, '19, Vol. III, No. 3) is an enthusiastic believer in tuberculin but only casually refers to removal of tonsils. It is a pity that more emphasis is not laid in the literature of this subject upon the fundamental importance of the following:

1. Removing foci of infection which in most cases will be found in the tonsils, *whether* or not on macroscopic examination they appear diseased.

2. Treat the patient who has the lumps in the neck and not the lumps alone.

3. Use all methods of treatment at your disposal according to the needs of the individual case,—conservative surgery, tuberculin, heliotherapy, x-rays, finsen rays, violet rays, etc.

THE CAMPAIGN AGAINST TUBERCULOSIS.

Palmer (*Jour. A. M. A.*, Sept. 27, '19, LXXIII, No. 13, 985) emphasizes the fact that our campaign against tuberculosis is intimately mixed with that for public health, and (*Am. Rev. of Tub.*, July, '19, Vol. III, No. 5) urges that we broaden our campaign. Lyman (*Am. Rev. of Tub.*, July, '19, Vol. III, No. 5) speaks for more coöperation; Hawes (Boston Med. & Surg. Jour., July 25, '18, CLXXIX, No. 4, 123), in discussing the present needs of the campaign, mentions the following as essentials: (1) Knowledge as to how much tuberculosis there is; (2) Knowledge as to the existing means of handling it, and (3) Coöperation; and (19th Ann. Report, Canadian Tub. Asso., Oct., '19) describes certain methods that might be discarded and others that might well be used more than they now are. Raw (*Brit. Med. Jour.*, Jan. 25, '19, No. 30, 30-911), Porter (*Brit. Jour. of Tub.*, Reprint 112), and Fine (*Jour. of Med. Soc. of New Jersey*, 1919) also speak well on this subject.

MISCELLANEOUS.

Brown, Petroff and Pesquera (*Am. Rev. of Tub.*, Dec., '19, Vol. III, No. 10) discuss the etiological factor in tuberculosis, such as dust of rooms, eating utensils, contaminated hands, saliva, kissing, tooth brushes, flies, coughing, etc. They conclude that kissing, eating utensils improperly cleaned may be dangerous factors, and that dust, flies, hands, telephone mouth pieces and properly cleaned eating utensils are not dangerous. Their investigations are of interest and importance.

Society Report.

MASSACHUSETTS THERAPEUTIC MASSAGE ASSOCIATION.*

Meeting at Hotel Brunswick February 17, 1920. Talk by Dr. Howard A. Moore on Massage in Orthopedic Cases.

Dr. Douglas Graham, President, in the Chair, opened the meeting by quoting the remark of Malgaigne, who said that massage was the soul of orthopedic surgery. Dr. Graham said it was not only the soul but a large part of the body also, now-a-days.

Dr. Howard Moore, in his opening remarks, said that he had prescribed massage in 50 per cent. of all cases treated at his office during the past three months. According to Dr. Moore, orthopedic physicians are in two main groups. Group 1 includes those who depend chiefly upon surgical braces and appliances, substituting artificial for natural support. Group 2 includes those who endeavor to preserve the greatest amount of normal function, using braces only when absolutely necessary and even then to be accompanied by suitable physiotherapeutic treatment. Those physicians who might be included in Group 1 are becoming fewer. Dr. Moore explained the changes which have come about in the treatment of fractures. The tendency of today is to shorten the period of immobilization and to apply early treatment for the restitution of function, believing the latter quality to be of greater imporance than the cosmetic effect alone. In Colles fracture the advantages of the palmar splint over the older, double-splint method was explained. Treatment with massage at the right time speeds the repair processes and in two or three weeks the part is fit for light work. In hospitals there is some indecision as to where the general surgeon's work and the orthopedic surgeon's work begin and leave off.

* Reported by Mr. Thomas Burns of Carnes' Institute.

Infectious or septic joints, two classes, *a*, *b*.

a. Infection in the joint itself.

b. Bacteria not in the joint itself, infection elsewhere, supplying toxin.

It used to be a good practice to prevent movement of an infected joint, but now everything possible is done to preserve local tone, giving due consideration to the severity of the inflammatory action, but persisting in the manipulation of the joint to maintain function.

Dr. Moore told of his experiences in the orthopedic wards in France. In one ward reserved for joint injuries the treatment being given to septic joints included exercising the part, causing pus to ooze out. After a while the joint developed a tolerance. Movements at first painful but persisted in despite active process going on. Joints, which formerly would have been looked upon as certain to become stiff, became well.

Atrophic Joint Conditions. Bones whose lime salts, erosion of cartilage and fusion of bones occur, diminished transfer of nourishment.

Hypertrophic Joints. Irritation from temperature changes and exposure. Case cited. Worker in photographic dark room, fingers in cold water for long periods. Affected joints rigid and painful, limited movement.

Strains. Old treatment; fixation. Modern method—(ankle) stirrup strap—partial fixation, leaves some work to muscles of part, follow with massage and graduated movement and massage.

Adhesions. Between joint structures. Treatment, old method; anesthesia and forcible breaking up, generally requires repetition and results unsatisfactory. Modern method—Graduated massage; manipulation, tonic baths and careful stretching. Results usually good.

Poliomyelitis. Massage for long time at suitable periods. Persist in treatment for a year if necessary. Avoid stretching weak muscles. Delay surgical treatment until other methods are exhausted.

Case of Burns about Arms and Chest. Skin tense about chest, absorption of subcutaneous fat, blood supply diminished, elbows stiff from lack of motion during healing process. Treatment—Massage with oil. In three weeks more progress can be registered than could have been accomplished in five months under ordinary surgical procedures as carried out in former times. Case cited of man falling, cutting flexor tendons of hand with broken glass. Tendons sutured, healed clean, lot of scar tissue, adhesion of skin to subdermal structures, tendon flexion limited. Massage effected cure. Dr. Moore recommended early massage to prevent adhesions, but cautioned against irritation of scar tissue by too strong friction.

Abdominal Ptosis Cases. These cases usually are accompanied by disturbed digestion and deficient bowel actions; also malnutrition. Dr. Moore recommends light support, if necessary, and main treatment to consist of graduated exercise and massage. The accompanying effects of improved abdominal muscular tone are invariably shown through improved intestinal and general systemic function.

In all cases the observance of individual requirements as to the duration, frequency and strength of this treatment is of prime importance.

Dr. Herman Marshall spoke in defense of artificial supports and his remarks were appreciated and endorsed by Dr. Moore, who, however, made it apparent that not enough opportunities had been afforded the body to exert its qualities for self-restoration. Comparison between past and present methods bear out Dr. Moore's statements.

Dr. D. Graham thanked Dr. Moore for the Society for his highly instructive talk and also thanked Dr. Marshall for his contributory remarks.

A paper was read on the subject of therapeutic sea baths by Mr. Thomas Burns. Mr. Burns called the attention of the Society to a statement that moist heat has seventeen times the penetrating power of dry heat. Further comparisons of this difference are necessary.

Attention was drawn to a paper by Dr. Marshall on Orthopedic Braces, etc.

The subject of intestinal regulation through enemas was briefly discussed in its relation to ante- and post-surgical treatment.

Book Review.

The Crimes of the Oedipodean Cycle. By Henry Newpher Bowman. Boston: Richard G. Badger. 1918.

The myths of the Oedipodean cycle present a story unusual in its dramatic interest. The details relating to the history of this family, burdened with curse and tragedy, are contradictory and confusing, and little about them is generally known. To the classical scholar, curious to discover the continuity of events, this small volume, *The Crimes of the Oedipodean Cycle*, will be of value. The tale of Oedipus, who unwittingly slew his own father and married his mother, touches the depths of mortal misery and suffering. This book presents several variations of the myth and offers many helpful explanations.

This volume contains an interesting introduction, which expounds the theory of Freudian psychologists, who see in this story an allegory of the human race.

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MATERNITY BENEFITS.

The Commission appointed to investigate this question and to report their findings, together with any recommendations regarding proposed legislation, at the extra session of the Legislature next November have sent to all licensed physicians of Massachusetts a request for their opinions upon the subject and for answers to a *questionnaire*. If any have failed to receive this letter the Commission will consider it a great favor to be so notified.

Although the first question is, "Have you been engaged in the practice of obstetrics during the past year?" that does not at all mean that opinions are not wanted from all practising physicians irrespective of their specialties. The question of State Aid to mothers and their infants is of vital importance to the whole medical profession. And it is most desirable that this canvas of medical opinion shall be as complete as possible.

About one sixth of those to whom the *questionnaire* has been sent have already sent in their answers. Many valuable suggestions have been given. Were there any unanimity among the profession, the Commission's task would be far easier than it is. For there can be no doubt of the great influence that any decided majority, for or against the proposed legislation, will have both with the Commission and with the Legislature.

As president of the Massachusetts Medical Society I have been much perplexed by the opposite opinions of different districts and groups, and I am very desirous of ascertaining the opinions of all our Fellows.

In still another way physicians can give great help in solving our problem. The Commission is studying the causes of all the maternal deaths, and also of the infant death rate, in the State during the past year and a half. Besides from the tabulations of statistics, all possible information is also being sought from the families and physicians concerned. All of the present or possibly available Lying-In Hospital facilities are also being studied. These special field investigators in the employ of the Commission are already being greatly aided by the medical profession.

Alfred Worcester, M.D.

BEGINNINGS OF HEALTH LEGISLATION IN PREHISTORIC TIMES.

In the ancient laws of Manu, intermingled with religious and superstitious beliefs and regulations may be traced interesting beginnings of modern health legislation. Although the codification of these laws is comparatively modern, the ancient Hindu beliefs incorporated in them date back probably to several centuries before Christ. A recent article on this subject in *The Clinic* tells how the ancient sages, in order to receive an authorized and standardized statement of the laws best adapted to the needs of man, approached the Hindu god Manu and begged him to declare the sacred laws for each of the four castes. With the precision and philosophic inspection characteristic of Hindu thought, these laws were formulated. A number of them reveal the attitude of the ancients towards matters of health.

In the days when the laws of Manu were made, nothing was known about germs. Hindu theology therefore explained the idiots, the dumb, blind, deaf, and deformed of their race as victims of sin committed in an individual's previous existence. Yet punishment was not always delayed until rebirth, for did not a gold thief have diseased finger nails, a slayer, consumption; a calumniator, foul breath; an adulterator, redundant limbs; a stealer of food, dyspepsia; a stealer of clothes, white leprosy, and of horses, lameness?

It is of considerable interest to compare with modern sanitary food regulations the early beliefs of the ancients on this subject. Garlic, leeks and onions, and all plants springing from impure substances were deemed unfit for food. The milk of human beings and of all wild animals except buffalo cows, and all substances turned sour, excepting sour milk and its products, were avoided. The food value of milk was recognized even in those early days. Other things to be avoided as food were carniverous birds, those living in villages, and those which feed by striking the beak, web-footed birds, those that scratch with their toes, those that live on fish, and pigs, especially village pigs. In these restrictions there seems to be a suggestion of the belief that proximity to man was conducive to unsanitary conditions. The proscription on meat goes further, and includes any solitary or unknown animal even if palatable, and five-toed animals, excepting the porcupine, hedgehog, iguana, and tortoise. A man who knowingly eats mushrooms, a village pig, garlic, a village cock, or any one of the various other items, becomes an outcast, while once a year a Brahmana must perform penance to atone for the unintentional eating of forbidden food. In another law barley and wheat are permitted with preparations of milk, while meat-eating goes by contraries, the animals destitute of motion being the proper food of those that move. An early expression of the modern butter fats regulations is revealed in the injunction that nothing should be eaten from which the oil had been extracted.

Public health administration of today is still attempting to regulate some matters considered even in prehistoric times. "One commodity mixed with another must not be sold as pure," is one of the injunctions, "nor a bad one as good, nor less than the proper quantity and weight." "Let the king fix the rates for the purchase and sale of all marketable goods," said Manu, "having considered whence they come, whither they go, how long they have been kept, the probable profit, and the probable outlay."

In many instances religious principles were the fundamental motives in regard to hygiene and sanitation. "Let him not bathe naked," seems to be a relic of water worship, while the pollution of a stream by human wastes, distinctly forbidden, probably had the same origin. On the other hand, however, the offensiveness of these wastes and not improbably the danger from them suggested the injunction to cover such material with the earth, sticks, and clods. In regard to eating utensils, it was required that the karu and the spoon be cleansed with hot water. Manu considered water an important purifying element, and ordered that it be sipped from the palm of one hand in some part designated according to the purpose. It was expressly forbidden to sip from the joined hands, possibly on account of the impurity of the left hand, to which were relegated all the menial duties, so that to become pure it must be washed ten times, then both hands seven times. The elements, earth, fire, water, and the wind were never unclean, while flies, the shadow of a cow or a horse, or a ray of the sun were cleansing factors.

Nor were the ancients without eugenic relations. Marriage was forbidden with women who were sickly or subject to hemorrhoids, consumption, weakness of digestion, or white or black leprosy. In one respect, by stating that "the mouth of a woman is always pure," the Manu laws discounted the bacteriological convictions of the twentieth century.

STANDARDS OF PHYSICAL FITNESS FOR CHILDREN ENTERING EMPLOYMENT.

The preliminary report of the Permanent Committee on Standards of Physical Fitness for Children Entering Employment, appointed by the Children's Bureau of the U. S. Department of Labor, has been announced. The report consists of two parts: General Recommendations and Minimum Standards of Physical Fitness for Children Entering and Working in Industry. The general recommendations advocate a minimum age of 16 years for entrance into industry on the ground that the period of pubescence, not completed in the majority of cases until the sixteenth year, is a time of special strain for the child. No child, according to the recommendations, should be allowed to go to work until he has had a complete physical examination and has been declared physically fit for the particular occupation which he is about to take up. A reëxamination for children when changing occupations and periodical examinations for all working children are deemed necessary. The need of special study by local administrative and medical officers of occupations in which children are likely to be employed is pointed out, and further scientific study of the effect of different kinds of work on the physique of boys and girls in their teens is declared to be essential. The fields which, in the opinion of the Committee, are in need of special research are listed.

The necessity for further study is urgent. However, on the basis of scientific studies already made and the experience acquired in administering child labor laws prescribing physical requirements now in force in a few states, it is possible to formulate certain tentative standards. These is it expected will aid materially in safeguarding children from the evil results of premature and unsuitable work.

The suggested standards cover normal development, indicate what constitutes sound health and physical fitness for specific occupations, and emphasize points to be observed and methods to be employed in physical examinations. Defects for which children should be permanently refused certificates of employment and those for which temporary refusals should be made are listed. A record form for the use of physicians in examining children and careful instructions for filling in this form are appended to the report.

The report will be sent in mimeographed form for criticism, before being printed, to experts in industrial hygiene, state labor departments, local certificate issuing officers, and interested persons throughout the country.

The Committee consists of the following persons:

Dr. George P. Barth, Director of Hygiene, City Health Department, Milwaukee, Wis., Chairman; Dr. Emma M. Appel, Employment Certificate Department, Chicago Board of Education; Dr. S. Josephine Baker, Chief, Bureau of Child Hygiene, Department of Health, New York City; Dr. Taliaferro Clark, representing the U. S. Public Health Service; Dr. C. Ward Crampton, Dean, Normal School of Physical Education, Battle Creek, Mich.; Dr. D. L. Edsall, Dean Harvard Medical School; Dr. George W. Goler, Health Officer, Rochester, N. Y.; Dr. Harry Linenthal, Director of Industrial Clinic Massachusetts General Hospital, Boston, Mass.; Dr. H. H. Mitchell, representing the National Child Labor Committee; Dr. Anna E. Rude, Director of Hygiene Division, U. S. Children's Bureau; Dr. Thomas D. Wood, Chairman on Health Problems and Education, Columbia University, New York City; Miss E. Nathalie Matthews, Director Industrial Division, U. S. Children's Bureau, Secretary.

MEDICAL NOTES.

Gift to Ohio State University.—Four hundred thousand dollars have been given by Charles F. Kettering, a trustee of the University, to Ohio State University, to be used in connection with the college of homeopathy.

Meeting of Surgeons at Montreal.—Surgeons from the United States, Great Britain, and South America will attend the clinical congress of the American College of Surgeons at Montreal on October 11 to 15. Fellowships in the college will be conferred on several Canadian and American surgeons. Consulting surgeons of the British Army will send a delegation to express appreciation of the work done by American surgeons with the British troops during the war.

Proposed Union of Physicians.—The following statements have been made by Dr. Thomas P. Foley, chairman of the contract practise committee of the Chicago Medical Society, who has started a movement among the members of the society to organize a union among the members of the profession in Chicago:

Why should a physician, who has studied for years to perfect himself for his work, be paid less than an unskilled laborer? Yet it is the rule rather than the exception.

Recently a physician giving full time to industrial surgery in a large Chicago plant, rendered first aid to a man working as an unskilled laborer. The physician received $75 a month with room and board. The laborer's pay check for one week, which he showed the physician, was for $80.

Take the state service for example. At the Dunning Hospital for the Insane the chief electrician stands next on the pay roll to the superintendent. His salary is $265 a month. That of the highest paid physician on the staff is only $245. The electrician is a union man. The physician has no organization back of him.

We propose to form an organization along semi-union lines in Chicago like the lawyers' association and other such bodies of professional men. It is not aimed at the public, but rather at industrial and other corporation employers of physicians.

International Surgical Society.—At the recent meeting of the International Surgical Society of Paris, Dr. W. W. Keen, professor of surgery at the Jefferson Medical College in Philadelphia, presided at the opening session of the five-day congress. After an address of welcome delivered by M. Honnorat, Minister of Public Instruction, Dr. Keen addressed the meeting, discussing the principal ideas which surgeons of modern days must defend and reviewing the work done in advancing the art of surgery during the war. He commented also upon the great contributions made by the French surgeons. Other subjects discussed at the meeting were surgery of the heart and blood vessels, surgical radiography, surgical hematology, fractures of the thigh, prophylaxis and treatment of tetanus. An exhibition of the most modern apparatus for the treatment of fractured limbs was given. The meeting this year is the fifth congress which has been held.

The John B. Murphy Memorial Association.—The death of Dr. John B. Murphy of Chicago on August 11, 1916, created among laymen and the medical profession a desire that a proper memorial be erected to his memory. It has been proposed, therefore, by the John B. Murphy Memorial Association that there be constructed at an estimated cost of five hundred thousand dollars, the John B. Murphy Memorial Hall of the American College of Surgeons on a site in Chicago given by a number of prominent citizens and accepted by the Regents in behalf of the College. In this memorial the College will acquire a building architecturally beautiful and much needed for important conferences and convocations and meetings for national and local medical societies. Space will be provided also in which it is proposed to maintain a pantheon of American medicine and surgery. To execute the suggested design will require about five hundred thousand dollars; of this amount, one hundred thousand dollars has been pledged, providing the balance of the requisite sum is subscribed. It is hoped that members of the profession will give this project their active support.

The Peking Union Medical College.—In a partial review of the work of the Rockefeller Foundation during 1919 it has been announced that the entire plant of the Peking Union Medical College, established through the China Medical Board of the Rockefeller Foundation, probably will be completed by January 1, 1921. Three of the teaching buildings of the college were occupied in October, 1919. The completed institution will include the following buildings: laboratories for anatomy, physiology, and chemistry; a pathology building; a two hundred and fifty bed hospital with provisions for about thirty private rooms; a large out-patient department; a hospital administration unit with quarters for resident physicians and internes; a nurses' home; plants which will supply water, heat, light, power and gas; and faculty residences.

Gifts of the General Education Board and of the Rockefeller Foundation.—The following announcements have been made by the trustees of the General Education Board and of the Rockefeller Foundation:

For appropriations from the fund of $50,000,000 which Mr. Rockefeller gave last December nearly 250 institutions have made application to the General Education Board. A careful statistical inquiry shows that in order to raise the level of salaries in a sufficiently large number of these institutions, to a degree somewhat commensurate with increased cost of living, their endowment funds would have to be increased by from $150,000,000 to $200,000,000.

It is evident that to accomplish this result the $50,000,000 in the hands of the board will have to be supplemented by funds from other sources in the ratio of two or three to one. This has been kept in mind in making appropriations which have been made contingent upon the raising of additional amounts.

At the recent meeting appropriations were made at ninety-eight colleges and universities out of those which are under consideration. To this group of institutions the General Education Board appropriated the endowment to increase salaries the sum of $12,851,666 on condition that they would themselves reach the goal they had set and secure for the same purpose supplementary sums aggregating $30,613,334. Thus, these colleges and universities, if successful, will increase their endowments available for teachers' salaries to the extent of $43,465,000.

In a few cases institutions are not asking for endowment funds but only for temporary contributions toward a certain total annual subscription which it is hoped later to fund permanently. The board has made a number of such appropriations on a two- or three-year basis.

For these purposes an additional sum of $2,184,384 was appropriated covering a period of one to three years, making a total appropriation by the General Education Board from Mr. Rockefeller's special gift of $150,036,050.

In the following list appropriations to medical schools in the United States were made by the General Education Board, while those to institutions in Brussels and Halifax were voted by the Rockefeller Foundation:

Washington University Medical School, St. Louis.—For endowment, $1,250,000; for additional laboratory facilities and equipment, $70,000.

Yale Medical School.—For endowment (toward a total of $3,000,000), $1,000,000.

Harvard Medical School.—For improved facilities in obstetrics, $300,000; for the development of teaching in psychiatry, $350,000.

Johns Hopkins Medical School.—For development of a new department of pathology (toward a total of $600,000), $40,000.

Dalhousie University Medical School, Halifax.—For buildings and equipment, $400,000. For endowments, $100,000.

Medical Research Foundation of Elizabeth, Queen of the Belgians, Brussels.—For general purposes of medical research, 1,000,000 francs.

Superstition Among Rumanian Peasants.—Among the Rumanian peasants, and particularly among the gypsies, there is a superstition that the death of a child is caused by an evil spirit having entered the body of the mother, and that beating the mother will drive out the devil and cure the child. Consequently these peasant mothers beat themselves when one of their children is ill. Recently a doctor attached to the American Red Cross Commission was called to see a Rumanian gypsy woman. He found that she was suffering from pneumonia but he also noticed numerous bruises on her chest, and upon inquiry was informed through an interpreter that one of her children had died two weeks earlier. The superstition is common among the peasant folks of Rumania. In numerous instances, the self-inflicted chastisement has led to permanent disability, and death has been known to result from the beating.

Award of the Cameron Prize.—Announcement has been made of the award of the Cameron Prize of the University of Edinburgh to Sir Robert Jones, in recognition of the advances he has made in orthopedics and his valuable contributions to the literature of the subject during the past five years. The prize was founded in 1878 by the late Dr. A. R. Cameron of Richmond, New South Wales, to be awarded annually to some person who within the previous five years has made important and valuable additions to practical therapeutics. The prize is of the value of about one hundred and fifty pounds. One of the conditions of its award is that the recipient shall give a lecture or course of lectures in the University. The first recipient was Pasteur; the second, Lister. The prize has not been awarded since 1915, when it was given to the late Sir Lauder Brunton.

Award of Honorary Degrees by the University of Cambridge.—The honorary degree of Doctor of Laws was conferred by the University of Cambridge on June 29 upon the following distinguished members of the profession attending the eighty-eighth annual meeting of the British Medical Association:

Sir Thomas Clifford Allbutt, K.C.B., M.D., Regius Professor of Physics in the University of Cambridge, President of the British Medical Association; Dr. Jules Bordet, Professor of Bacteriology, Parasitology, and Epidemiology in the University of Brussels; Dr. Simon Flexner, Director of the Rockefeller Institute for Medical Research; Dr. Piero Giacosa, Professor of Experimental Pharmacology in the University of Turin; Sir George Makins, G.C.M.G., President of the Royal College of Surgeons of England; and Sir Norman Moore, Bt., President of the Royal College of Physicians of London.

BOSTON AND MASSACHUSETTS.

Bequest to Addison Gilbert Hospital.—The sum of four thousand dollars was bequeathed to the Addison Gilbert Hospital of Gloucester by the will of the late Mrs. James S. Ayer of Gloucester.

Fall River Medical Society.—At a meeting of the Fall River Medical Society on July 21, the members voted against the Maternity Bill now before the Legislature.

Award of Honorary Degree to Dr. Harvey Cushing.—The honorary degree of Doctor of Laws was conferred upon Dr. Harvey Cushing on July 29, by Cambridge University, England.

Instructive District Nursing Association.—The work of the Instructive District Nursing Association in Boston has increased considerably during the first six months of 1920. During this period, a total number of 169,529 visits was made by the visiting nurses, and 17,956 new patients registered. Of these new patients 2,562 were new-born babies, and of the visits, 12,180 were made to expectant mothers. This represents a gain over the work done in the first months of 1919 of 51,047 visits and 6,468 new patients, with an increase of 721 new-born babies registered with the Association and 5,822 visits made to expectant mothers. The accessibility of the nurses has been appreciated particularly by communities in the North and West ends. A total number of 30,304 visits was made and 3,165 new patients registered in these districts, an increase of 9,052 visits and 1,056 new patients. In Dorchester, 24,334 visits and 2,900 new patients represent the gain over the first six months, 1919, of 11,589 visits and 1,385 new patients.

The Boston State Hospital.—The eleventh annual report of the Boston State Hospital for the year ending November 30, 1919, has been issued. At the beginning of the statistical year there was a total number of 1,919 persons under treatment either in the hospital department, the psychopathic department, in private families, or on visit or escape. At the close of the year this number had increased to 2,039. The psychopathic department received 1,882 patients in its wards during the year, while, in addition, 2,112 other persons were given advice and treatment by the out-patient department. The psychopathic department has been relieved of the functions of instruction and research by the establishment of the Massachusetts State Psychiatric Institute by the Commission on Mental Diseases. The total number of cases treated by the entire institutions during the year was 4,068 The recovery rate, based on the number of first admissions, was 6.3 per cent.; based on the total number cared for during the year, 2.63 per cent.; based on the average daily population of the institutions, 6.34 per cent. The corresponding death rates were 19.13 per cent., 7.99 per cent., 19.26 per cent.

The forms of mental disease shown by first admissions included traumatic psychoses, general paralysis, senile psychoses, psychoses with cerebral arteriosclerosis, cerebral syphilis, Huntington's chorea, brain tumor, and other brain or nervous diseases, alcoholic psychoses, psychosis with pellagra, psychoses with other somatic diseases; manic-depressive psychoses, involution melancholia, dementia praecox, paranoiac conditions, epileptic psychoses, psychoneuroses and neuroses. The general health of the hospital patients has been good during the year. The influenza epidemic, however, continued during December, 1918, and January, February and April of 1919. Of the 548 cases to whom the vaccine furnished by Dr. Timothy Leary of Tufts Medical School was administered, only one, or .18 per cent., developed pneumonia, and only three, or .55 per cent., died.

The out-patient department of the hospital has supervised patients in family care and those at home on visits, and the after care of cases discharged from the custody of the hospital. A total number of 435 cases has been cared for by the social service workers of the hospital. The report contains summaries of the work done by the pathological laboratory and of the surgical and dental work, and statistical tables of cases. Plans have been made for extending the work in occupational therapy in the hospital wards.

The future development of the hospital needs consideration. When the Boston Insane Hospital became a state institution in 1908, it had a capacity of 764 beds. The new building nearing completion will bring the total capacity up to 2,092; yet even this does not provide facilities sufficient for the admissions from the city of Boston, and if the hospital were doubled in size it would not have room enough for the Boston residents now in state hospitals. As the institution could be increased to a capacity of over five thousand, this step should be contemplated if the insane patients of Boston are not to be sent indefinitely to institutions far removed from the city.

The Peter Bent Brigham Hospital.—The sixth annual report of the Peter Bent Brigham Hospital records the activities and services of the hospital during the year 1919. More patients were cared for by the hospital during 1919 than ever before, although the number of days' treatment was slightly lower than that of 1918; with the exception of 1917, the number of visits in the Out-Door Department exceeded that of any previous year. There were admitted during the year to the hospital wards and single rooms 2,411 medical and 1,871 surgical cases, and a total number of 4,444 patients received treatment. The Out-Door Department treated 7,631 new cases, and 49,972 visits were made.

The report of the Surgeon-in-Chief describes the growth of the hospital surgical service since its organization seven years ago, and outlines its present needs for insuring adequate development in the future. The classificaton and tabulation of diagnoses and operations on the surgical service follows the arrangement suggested by the interhospital committee appointed to agree upon a classification of diseases, incorporating the international classification section numbers, which possibly may prove to be of some aid in the compilation of vital statistics. The summary of surgical statistics shows a total number of 1,563 operations, 76 incidental operations, and a total number of 102 deaths, of which 79 were post-operative and 23 non-operative. Of the 198 operations performed on the central nervous system in the neurological service, there were 18 fatalities, giving 9.1 per cent. mortality. The report contains 79 abstracts of surgical cases.

The work of the Medical Department has been extended by the appointment, in addition to the group of resident and visiting physicians who carry on the routine care of the patients and therefore have only a limited amount of time for research work, of a number of younger physicians, associates, who devote variable amounts of time to research problems in the wards and laboratories, and in the Out-Patient Department. These Associates have assisted also in grouping the patients in the Out-Door Department so that special attention and care could be given to patients suffering from the same diseases. The increasing demands upon the medical as well as upon the surgical department make it necessary to enlarge the staff if future investigative work and service to patients are to be continued in accordance with the advance of medical science. The Medical Service has been assisted in the maintenance of its Out-Door Department by the coöperation of the Social Service Department.

During 1919, 1,134 patients were brought to the attention of the Social Service Department. There has been a social worker each for the medical wards, the surgical wards, the Out-Door Department, the diabetic clinic, the heart clinic, and the gastric, tuberculin, and venereal clinics. Patients with reportable specific diseases and certain other infectious diseases, and also patients who have been advised to return for observation or treatment, have been cared for by follow-up work. In 1919 for the first time, occupational therapy was introduced in the hospital and out-patient wards.

The Pathological Department has made 106 autopsies, and has carried on the usual bacteriological examinations. The research work of the department was extended by the month's absence of Dr. Wolbach in Mexico for the purpose of making studies on typhus fever. The material obtained by Dr. Wolbach enabled him to demonstrate the causal agent of the disease and to classify it in the new group of parasites of which the cause of Rocky Mountain spotted fever is the type.

Obituary.

LAURA ANN CLEOPHAS HUGHES, M.D.

Dr. Laura Ann Cleophas Hughes died at the House of the Good Samaritan, Roxbury, July 30, 1920. The daughter of Lawrence John Hughes, a contractor, and Nancy Conlan Hughes, a noted beauty, she was born in Boston in 1860 and was educated by a relative, by the Sisters of Charity and in the public schools. In the eighties of the last century she became a pupil nurse at the Boston City Hospital. There she received a diploma in due course, remaining as head nurse and supplementing her training subsequently by service at the Boston Lying-In Hospital. Going on to the study of medicine, she graduated from Tufts College Medical School in 1895, joined the Massachusetts Medical Society the following year, and settled in practice in her native city after spending a few months in the Roman Hospital at Rome, Italy

On the opening of the Spanish War Dr. Hughes organized the Boston Society of Red Cross Nurses, which met at her home, and when hostilities began some of the nurses were ready for active service. She served as a nurse during the war and had charge of a department at Montauk. She was an ardent supporter of the idea of trained nurses for the Army and Navy, and her efforts at Washington resulted in recognition of her plan for the Army. She was also an advocate of the registration of nurses and of raising the standards of nursing.

In 1914, after the Salem fire, Dr. Hughes opened a baby camp and hospital in that city, setting up tents and cots where mothers and babies could receive care. In October, 1918, Health Commissioner Mahoney appointed Dr. Hughes medical inspector for the city of Boston. She was the first and only woman medical inspector in the health department of the city.

She had a splendid personality, a tall, commanding figure, and a ready sympathy and interest.

Dr. Hughes was a member of the American Medical Association, Massachusetts Medical Society, an honorary member of the Ladies' Catholic Club, St. Mary's Academy Alumnae Association of South Bend, Ind., life member of the Holy Ghost Hospital Association, and she was one of the pioneers in the organization of the 101st Auxiliary Association. She also was an early member of the Professional Woman's Club. Her sole surviving relative is a sister, Miss Sarah Joseph Hughes, a business woman of Boston.

* * *

Award of Honorary Degree by Cambridge University.—The honorary degree of Doctor of Laws was conferred by Cambridge University upon John Jacob Abel, professor of pharmacology at Johns Hopkins Medical School, Baltimore, on July 29.

Bubonic Plague at Galveston, Texas.—On July 30, two additional deaths from bubonic plague were announced by the public health officer at Galveston, Texas. This brings the total number of cases to five, four of which have proved to be fatal.

Correspondence.

PSYCHICAL RESEARCH AGAIN.

Mr. Editor:

At last a physician comes to the defense of spiritualism. Dr. D. W. Wells, in the Journal of August 5, gives a brief origin of the "Society for Psychical Research" with its personnel, and quotes from Prof. Barrett and the late Prof. Hyslop in defense of "spirits." Now the authority of a great name or a man's eminence or ability, whether in his own or in some other sphere, is no guarantee in itself of sound judgment. A catalog of great names plainly affords no proof of the truth of any doctrine whatsoever. Were the opinions of outstanding men a test of truth, we might still contend concerning the earth's flatness or debate the respective merits of the heliocentric and geocentric theories. The truth or falsehood of a theory can be determined only by studying and weighing the evidence on which it rests. When a theory is found to agree with most of the facts involved, it may be regarded as an approximation of the truth, and when it is in harmony with all the facts it becomes an established truth.

It might interest Dr. Wells to know that Prof. Newcomb, the first president of the "Research" society, and a distinguished astronomer, relinquished in despair his quest for reliable evidence of spiritual forces and returned to his original sphere of physical research as the sole channel available for furthering the happiness and knowledge of mankind. And at the time Sir Oliver Lodge was on his American lecture tour, Prof. G. Stanley Hall of Clark University, wrote one of the most scathing criticisms of Sir Oliver and of spiritualism, which was published in the *Boston Herald* last spring. I agree with the doctor when he says that "in deciding what should be our attitude toward psychical research, one should bear in mind the personnel of the founders of the society."

Let me again repeat that "It is the duty of the physician to protect his business and to combat all cults not based on scientific facts." The doctor says that statement is "so bluntly commercial that it should make every conscientious physician blush for shame." Does an honest effort to maintain high scientific standards in the medical profession and to protect that profession from charlatans and fakers savor of commercialism? Does Dr. Wells give his services or does he sell them for a pecuniary reward, the same as all physicians? I will pass over the statement which accuses the author of essaying "to speak for the medical profession" as not only unwarranted but ridiculous, and it is an old game to accuse your opponent of "dogmatism" when you are unable to answer his arguments.

Self-delusion and the will to believe, because they want to believe, have made many adherents to the spiritualistic cult. No movement has had so much fraud, deception and illusion connected with it as spiritualism. The scientific method is not the method of "spiritists." To realize the difference between the two nothing could be better than to read a book by Sir Oliver Lodge or Conan Doyle on spiritualism and then to turn to Darwin's "Origin of Species." You are then in another world, a world where the most welcome facts are most doubted and every link in the chain of reasoning is jealously tested. No question should be taken up without reference to its evolutionary aspect, but few take the trouble to investigate either their own or any other religion, for comparison and classification are dangerous to "belief." Honest criticism tends to constructiveness along all lines.

I might suggest to the doctor that we hire a hall and debate the subject. No doubt it would prove instructive, amusing, and interesting to us both.

J. Danforth Taylor.

East Boston, Aug. 5, 1920.

The Boston Medical and Surgical Journal

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Original Articles.

THE PHENOLSULPHONEPHTHALEIN TEST AND THE NON-PROTEIN NITROGEN OF THE BLOOD IN CHRONIC NEPHRITIS.*

By Reginald Fitz, M.D., Boston,

Associate in Medicine, Massachusetts General Hospital.

During the last few years the importance of special laboratory tests for various diseases has been so greatly emphasized in medical literature that it is desirable for the general practitioner to have the practical limitations of such methods sharply defined. This paper discusses the phenolsulphonephthalein test and the non-protein nitrogen or urea concentration of the blood in the diagnosis, prognosis and treatment of chronic nephritis. These tests are selected for discussion because they are being generally used in this hospital and many other places and not because they are necessarily the best or the most comprehensive.

THE PHENOLSULPHONEPHTHALEIN TEST AND THE NON-PROTEIN NITROGEN OF THE BLOOD IN THE DIAGNOSIS OF CHRONIC NEPHRITIS.

The case records of the Massachusetts General Hospital[1] show that chronic nephritis was found in 90 autopsies performed there between 1914-1919. All but seven of these cases pathologically were of chronic glomerulonephritis or of arteriosclerotic nephritis. The remaining were cases of a mixture of these two types of nephritis or were of various atypical and obscure forms which are so rare as to be negligible. The essential lesions in the two common types of disease were found in the glomeruli or in the smaller renal vessels. Both types showed such characteristic gross and microscopic appearances that an anatomical distinction was made in all cases except the few in which one of these types of nephritis was superimposed upon the other.

The records of fifteen cases of chronic glomerulonephritis and of twenty-six cases of arteriosclerotic nephritis which had been studied during life by one or more phenolsulphonephthalein tests and blood nitrogen determinations were selected from this material for closer analysis. The records of these cases did not suggest any definite relationship between the type of nephritis found at autopsy and the results of these two tests for kidney function made during life nor did they show any close relationship between the amount of gross anatomical destruction of the kidney and the apparent degree of impairment of renal function. These observations confirm Frothingham,[2] who was unable to correlate anatomical and clinical findings from a more elaborate study of the nephritic material of the Peter Bent Brigham Hospital in 1916, and Stengel, Austin, and Jonas,[3] who reported cases from the Hospital of the University of Pennsylvania in 1918. The conclusion therefore is justifiable that these tests do not help in establishing the diagnosis of any type of nephritis based upon underlying pathological anatomy.

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* Presented in part at the Massachusetts General Hospital on March 17, 1920.

Moreover, the phenolsulphonephthalein test and the non-protein concentration of the blood are not of significant value in the diagnosis of early chronic nephritis before characteristic physical signs and symptoms have developed. When either test is sufficiently abnormal to be positive it is usually accompanied by a fairly definite train of physical signs. When both tests are negative in the presence of outspoken symptoms of chronic nephritis, it is not justifiable to assume that no kidney lesion exists. Certainly a better idea of the underlying pathological process in the cases of this series was obtained by the history, routine physical examination and urinalysis than by attempting to interpret the recorded results of the functional tests which were made.

TABLE I.

CHRONIC GLOMERULO NEPHRITIS.

No.	Age	Duration of Symptoms	Stay in Hospital	Cardiac Hypertrophy	B. P. +150 M.M.	Edema	Eye-Grounds	Urine	
								Sediment	Sp. G.
1	35	5 months	5 months	Yes	Yes	No	Retinitis	Casts	1005-15
2	32	8 years	1 week	Yes	Yes	No	Retinitis	Casts	1010
3	40	6 months	5 days	Yes	Yes	Yes	———	Casts	1015
4	38	6 months	1 day	Yes	No	No	———	Blood Leucs.	1012
5	34	5 months	2 weeks	Yes	Yes	No	———	Blood Leucs.	1008-14
6	33	9 months	1 month	No	Yes	No	Retinitis	Blood Leucs. Casts	1006-24
7	31	1 year	14 days	Yes	Yes	No	Retinitis	Blood Casts	1010-04
8	30	3 months	6 weeks	Yes	No	Yes	Negative	Blood Leucs. Casts	1012-30
9	27	3 years	3 days	No	Yes	No	———	Blood	1012-16
10	29	3 weeks	9 weeks	——	Yes	No	Retinitis	Casts	1007-12
11	30	6 years	3 weeks	Yes	Yes	Yes	———	Blood Casts	1008-18
12	27	11 years	16 days	Yes	Yes	No	Retinitis	Blood Leucs. Casts	1008-12
13	23	?	12 days	Yes	Yes	No	Edema	Blood Leucs.	1016
14	26	11 days	6 days	Yes	Yes	No	Negative	Blood Leucs.	1012-17
15	29	5 weeks	3 weeks	No	Yes	No	Retinitis	Leucs.	1008-10

Average age	32 yrs.	Eye-ground changes	80%
Average duration	2¼ yrs.	Casts	62½%
Cardiac hypertrophy	75%	Blood	69%
Hypertension	87½%	Leucocytes	44%
Edema	19%		

All these cases had varying am'ts of albuminuria.

Chronic glomerulonephritis as judged by these cases is a disease of young people. It tends to run a long, slow course, but in many cases does not cause appreciable symptoms until a relatively short time before death. It is usually accompanied by the physical signs of cardiac hypertrophy and hypertension and often by albuminuric retinitis. Oedema may or may not be present. The urine always has albumin in varying amounts, and is usually of low specific gravity. The sediment contains blood commonly, casts often and leucocytes less frequently.

Arteriosclerotic nephritis, in contrast, is a disease of old people, although it may be found in the young. In other respects it is much like chronic glomerulonephritis. It runs a long, slow course. It is generally accompanied by the physical signs of cardiac hypertrophy and hypertension and often by albuminuric retinitis. Oedema may or may not be present. The urine always has albumin and is usually of low specific gravity. The sediment, as opposed to chronic glomerulonephritis, contains casts commonly, blood often, and leucocytes occasionally.

On the whole, chronic nephritis in young

ARTERIO-SCLEROTIC NEPHRITIS.

No.	Age	Duration of Symptoms	Stay in Hospital	Cardiac Hypertrophy	B. P. +150 M.M.	Edema	Eye-Grounds	Urine Sediment	Urine Sp. G.
1	55	Months	2 weeks	None	. . .	Yes	Hemorrhage and Retinitis	Blood Leucs. Casts	1000-18
2	58	1½ years	32 days	Yes	Yes	No	Hemorrhage and Exudate	Leucs. Casts	1006-14
3	57	7 months	1 week	Yes	Yes	Yes	Negative	Blood Leucs. Casts	1014
4	68	8 months	7 weeks	None	No	Yes	———	Casts	1005-12
5	57	6 months	8 days	None	Yes	No	———	Leucs.	1007-10
6	45	6 months	7 days	Yes	Yes	Yes	Arterio-scl. Retinitis	Blood Leucs. Casts	1010-12
7	56	2 years	10 days	None	Yes	Yes	———	Leucs. Casts	1012-14
8	81	?	4 days	?	Yes	Yes	———	Casts Blood	1020
9	56	3 years	16 days	Yes	Yes	Yes	Hemorrhage	Casts	1010-26
10	69	2½ years	3 weeks	Yes	Yes	Yes	Hemorrhage	Casts	1010-30
11	62	10 months	5 days	Yes	Yes	Yes	Negative	Leucs. Casts	1010-18
12	65	15 years	9 days	None	Yes	No	———	Blood Casts	1010-12
13	38	2½ years	11 days	None	Yes	No	———	Blood Leucs.	1008-16
14	46	1 year	17 days	None	Yes	Yes	Hemorrhage and Exudate	Casts	1006-10
15	37	1 year	10 days	Yes	Yes	No	———	Blood	1006-12
16	45	2½ mos.	22 days	Yes	Yes	No	———	Casts Blood	1006-18
17	47	9 days	6 days	Yes	Yes	Yes	Retinitis	Blood Casts	1018-13
18	43	6 years	17 days	Yes	Yes	No	Retinitis	Casts	1022
19	45	4 years	8 weeks	Yes	Yes	No	Arterio-scl.	Casts	1006-12
20	44	3 years	3 months	Yes	Yes	No	Hemorrhage	Casts	1015-08
21	53	1½ years	11 days	Yes	Yes	No	Retinitis	Casts	1006-18
22	62	6 weeks	10 days	None	No	Yes	———	Blood	1008-10
23	61	7 weeks	4 weeks	Yes	Yes	No	———	Leucs. Blood	1008-12
24	33	1 week	1 month	None	Yes	No	Retinitis	Casts	1008-14
25	44	9 years	5 weeks	Yes	Yes	Yes	Arterio-scl. Hemorrhage	Casts	1010-12
26	46	3 years	10 days	None	Yes	No	Retinitis	Leucs.	1006-12

Average age	52 yrs.	Edema	46%
Average duration	2½ yrs.	Eye-ground changes	87.5%
Cardiac hypertrophy	61%	Blood	46%
Hypertension	92%	Leukocytes	26%

All these cases had varying amounts of albuminuria.

people at autopsy is usually of the glomerular type, although it may be arteriosclerotic, while chronic nephritis in people above forty is almost always of the arteriosclerotic type. Both diseases are chronic and tend to be accompanied by cardiac hypertrophy, increased blood pressure, eye-ground changes and by a urine which contains albumin and of which the sediment has renal elements. This combination of physical signs justifies the diagnosis of chronic nephritis regardless of what the phenolsulphonephthalein test and the blood nitrogen concentration may be. Cases with histories suggesting chronic nephritis but without the physical signs should be studied most carefully and other less common types of the disease should be excluded, such as amyloid nephritis, lesions due to calculi, or tumor, or to subacute glomerulonephritis without hypertension or cardiac hypertrophy but with oedema and albuminuria. The phenolsulphonephthalein test and the non-protein nitrogen concentration of the blood do not determine the type of kidney lesion nor the existence of any kidney lesion before characteristic physical signs have developed. Their value in the diagnosis of chronic nephritis is secondary to that of ordinary clinical methods.

THE PHENOLSULPHONEPHTHALEIN TEST AND THE NON-PROTEIN NITROGEN OF THE BLOOD IN THE PROGNOSIS OF CHRONIC NEPHRITIS.

Considerable stress has been laid by various writers upon the prognostic value of the phenolsulphonephthalein test and the concentration of the non-protein nitrogen of the blood in chronic nephritis. In most cases, as death approaches, the capability for elimination of phenolsulphonephthalein diminishes and the non-protein nitrogen of the blood increases. Frissell and Vogel[4] have gone so far as to suggest that by plotting the course of a very long series of cases it might be possible to arrive at an average expectation of life as indicated by these tests from any individual determination. Until a large amount of carefully controlled data has been collected to establish this point one must remember that many nephritis cases with atypical function have been reported and that in most cases the phenolsulphonephthalein test or the non-protein nitrogen concentration of the blood have not offered immediate prognostic information which could not be obtained by simpler ways. The cause of uraemia is still undiscovered but certainly does not depend upon so-called nitrogen retention, and nephritis cases, besides dying of uraemia, commonly die of intercurrent infection or of some cardiovascular complication which cannot be predicted. Even cases of pure nephritis, such as those reported by O'Hare,[5] with fatal outcome in uraemia may live for several years with remarkably low renal function as judged by laboratory tests. The following table from this hospital of fourteen fatal cases in which the phenolsulphonephthalein test and non-protein nitrogen concentration of the blood were made at the same time, helps to illustrate the possible lack of immediate prognostic information obtained by these methods.

Table II.

Case No.	Phenolsuphonephthalein Excretion in 2 Hours	Non-Protein Nitrogen of Blood M.M. per 100 c.c.	Days before Death
1	20%	50	5
2	20%	36	14
3	20%	28	21
4	10%	66	75
5	5%	125	5
6	5%	71	4
7	5%	66	21
8	5%	56	2
9	0%	220	9
10	0%	204	7
11	0%	200	5
12	0%	132	2
13	0%	82	6
14	0%	52	9

As can be seen, three cases with a phenolsulphonephthalein excretion of 20% lived between five days and three weeks, and the non-protein nitrogen concentration of the blood in these cases varied between 28-50 mgm. per 100 cc. One case with a phenolsulphonephthalein excretion of 10% lived for two and one-half months with a non-protein nitrogen concentration in the blood of 66 mgm. per 100 cc. Four cases with 5% phenolsulphonephthalein excretion lived between two days and three weeks, the case with the lowest non-protein nitrogen concentration in the blood dying the soonest. Six cases with a zero phenolsulphonephthalein excretion lived between two and nine days. The blood nitrogen concentration in these cases varied between 52 and 220 mgms. per 100 cc., the case with the highest blood nitrogen concentration being one of the two which lived the longest.

Therefore at present the value of a single phenolsulphonephthalein test or blood nitrogen figure in the prognosis of chronic nephritis is less than the value of careful clinical study, and while of importance in affording evidence confirmatory to clinical observation is of secondary interest.

THE PHENOLSULPHONEPHTHALEIN TEST AND THE NON-PROTEIN NITROGEN OF THE BLOOD IN THE TREATMENT OF CHRONIC NEPHRITIS.

The phenolsulphonephthalein test and the non-protein nitrogen concentration of the blood may become of great value in following the course of a chronic nephritis and the results of treatment. In this relation, however, they must not be considered as tests for kidney function so much as methods for studying certain phases of the pathological physiology of the kidney under given conditions. Their results must be correlated with the patient's history, physical examination and condition, and must be repeatedly observed over a long period of time.

The phenolsulphonephthalein test is so easy to perform that its simplicity opens up various chances of error. Animal experiments and clinical observations have established the fact that the amount of dye excreted in the urine after its intramuscular or intravenous injection bears a direct relation to renal function at the time the test is made. In performing the test repeatedly all conditions which can be regulated must be kept as constant as possible. The same amount of dye accurately measured must be injected into the same muscle or vein at each repetition of the test. The length of time for the test must be measured and kept constant. The same amount of fluid used to insure a flow of urine must be given at the same time before each test is begun. The greatest care must be taken in collecting specimens, and in making colorimetric readings. Unless all these factors are controlled critically, the results from the test in repeated observations are vitiated.

Nitrogen retention in its proper sense implies that the nitrogen output in the urine is less than the nitrogen intake in the food as a result of which there is a continuous positive nitrogen balance with a constantly increasing amount of nitrogen held back in the blood by damaged kidneys. In actual use, the term has come to be applied to any condition associated with an increased concentration of nitrogen in the blood without reference to nitrogen balance and the finding of a blood nitrogen concentration higher than the average normal has been called nitrogen retention and has been taken to indicate disturbed renal function.

In most cases of nephritis, until shortly before death, an increased blood nitrogen concentration is not due to a continuous process of piling up nitrogen in the body owing to the inability of the kidneys to excrete the nitrogen formed in metabolism. This has been demonstrated by Widal,[6] McLean,[7] and others, who have shown that the nephritic individual tends to keep in nitrogen equilibrium just as does the normal. If the nitrogen intake in the diet is increased, the nitrogen output in the urine is increased and if the nitrogen intake is diminished so is the nitrogen output. In a normal individual who is given a high protein diet, the blood nitrogen concentration becomes abnormally high and diminishes as the nitrogen intake is diminished. The nephritic patient reacts in identical fashion, differing from the normal in degree only.

This phenomenon led Ambard[8] to work out his "constant" and McLean his "Urea Index," both being formulae designed to express in mathematical terms the relationship between the concentration of urea in the blood and the rate of urea excretion in the urine at a given time. By employing the constant or the urea index, it is possible to demonstrate abnormalities in kidney function which are overlooked by blood analysis alone. Therefore in interpreting the blood nitrogen concentration most intelligently it is important to know the nitrogen intake in the diet at the time the test is made, as well as the nitrogen excretion in the urine, and it is preferable to use either Ambard's constant or the urea index rather than the blood nitrogen figure alone.

Two cases are demonstrated to illustrate the importance of this fact.

The first patient (E.M., No. 2347998) was a man 29 years old who entered the hospital January 25, 1920, with erythema multiforme. After being in the hospital for a few days he developed signs of acute nephritis accompanied by increased blood pressure, hematuria, and oliguria. He was given a diet containing each day about 9 gms. of nitrogen and 3 gms. of sodium chloride. His blood and urine were analyzed quantitatively at weekly intervals and showed the following results which have been recorded graphically:

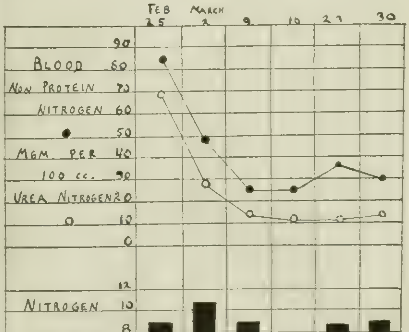

Chart I.

As the nitrogen excretion was approximately the same on each of six examinations and corresponded closely to the nitrogen intake in the diet, true nitrogen retention did not exist. At the first observation of the blood non-protein nitrogen and urea nitrogen were markedly increased, quickly falling to within normal limits. From the last examination of the blood alone one might naturally conclude that the nephritis had become quiescent.

The urea index, however, which at first was very low, showed a rapid initial rise but remained stationary on the four last examinations and was still below the average normal of 80. This, coupled with the facts that the man was losing weight steadily and that his urine continued to show albumin, blood and casts, suggested that his nephritis was not healed and that his blood analyses alone meant relatively little. The urea nitrogen and total non-protein nitrogen figures were within normal limits because of the low protein intake of the diet. Relatively, both were abnormally high.

The second case (W. M., No. 234964) was a

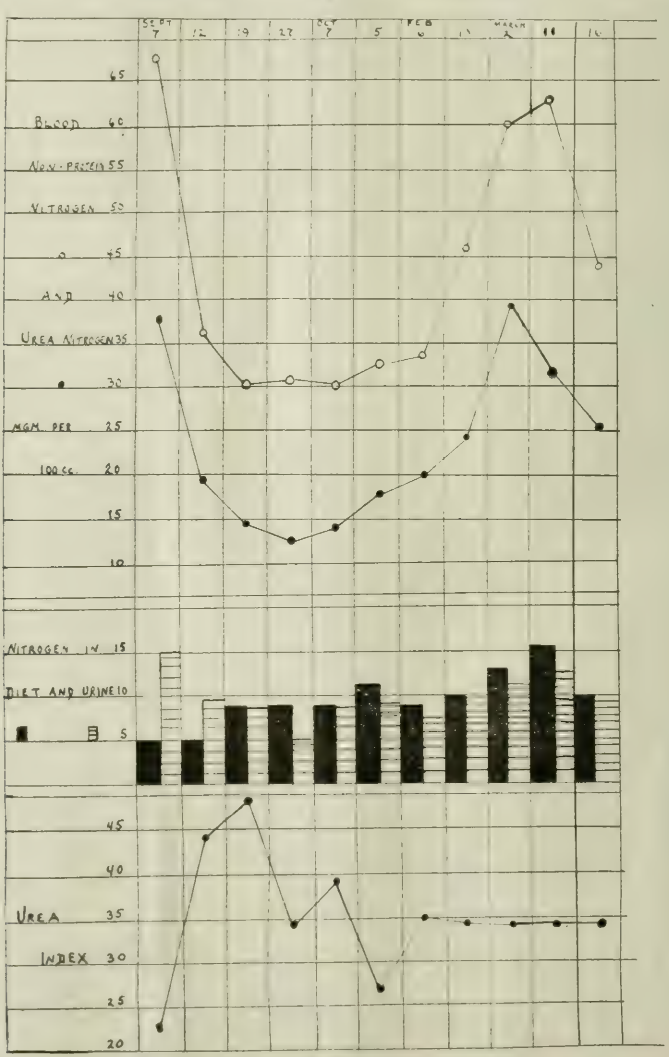

Chart II.

man 55 years old, who entered the hospital on September 7, 1919. He had diabetes complicated by arteriosclerosis, cardiac hypertrophy, and dilatation, arteriosclerotic nephritis with hypertension, albuminuria, and cylindruria. His urine and blood were analyzed at intervals, the essential data being charted below.

The most striking feature of this chart are the variations encountered in the blood non-protein and urea nitrogen curves. At first, there was an elevation of both which soon dropped to within normal limits, then rose to a considerable degree and finally dropped again to a low figure. These differences are not due to changes in renal function as the blood figures suggest, but are due to variation in the nitrogen intake of the diet. At first the patient was given a low protein diet which was gradually increased. On the first two observations the nitrogen excretion was in excess of the intake, suggesting reaction from true nitrogen retention. After a few days, however, the patient came into nitrogen equilibrium and remained so during the remaining period of observation. As the protein intake and nitrogen output increased, the non-protein nitrogen and urea nitrogen in the blood increased, until finally the nitrogen intake and output were again diminished when there was a simultaneous drop in the blood figures. Renal function as judged by the urea index was nearly constant in eight out of the eleven tests. At first it was low, possibly due to superimposed chronic passive congestion, and for two observations following was increased. Subsequently it remained at almost a fixed level.

In other words, the non-protein nitrogen of the blood was varied by dietetic changes and not by nitrogen retention. Relatively, the degree of accumulation of nitrogen in the blood remained constant although the actual figures of the blood nitrogen were between 30 and 63 mgm. per 100 cc. Renal function was no better when the blood nitrogen was normal than when it was increased.

The traditional treatment of chronic nephritis is designed to lessen the load thrown upon damaged kidneys by the excretion of waste products. This is usually attempted in the first instance by restriction of diet. It has been assumed that cases with a normal blood nitrogen concentration are in better condition than cases with a high blood nitrogen concentration, and therefore some form of restricted protein diet has been employed to keep the blood nitrogen figure within normal limits. But no evidence has been produced to prove that a low protein diet and a normal blood nitrogen concentration actually improve the degree of nephritis, while the recent work of Epstein[9] suggests that a high protein diet may be beneficial under certain conditions.

There is unquestionably some relationship in many cases of chronic nephritis between oedema and sodium chloride retention. Therefore a restricted salt diet is often prescribed. The underlying pathological physiology of oedema is, however, by no means clear and there is no proof that the mechanical presence of oedema increases the degree of nephritis or the degree of renal insufficiency.

Purgation, sweating, and bleeding are three measures which have been used in the treatment of chronic nephritis for many years. No critical study of the way in which these methods can be used to best advantage has been reported. On the whole, the present treatment of chronic nephritis is empirical. Such tests as the phenolsulphonephthalein test and Ambard's constant or the urea index offer methods by which various phases of the disease can be studied as problems in pathological physiology. By repeating such tests when they are properly controlled under different forms of diet or other therapeutic measures, it is possible to measure the progress of the disease under varying circumstances in more or less quantitative fashion and to assemble facts from an individual case which in future may make its treatment logical and systematic.

CONCLUSIONS.

The phenolsulphonephthalein test and the non-protein nitrogen concentration of the blood are two tests for kidney function which are being generally used for the diagnosis, prognosis, and treatment of chronic nephritis.

These tests are not of obvious value in the diagnosis of chronic nephritis as they do not point out the presence of any specific pathological type of lesion in the kidney and as they do not demonstrate the presence of kidney disease in the absence of common physical signs.

From a pathological point of view, there are two common types of chronic nephritis. The essential lesions of chronic glomerulonephritis are found in the glomeruli and of arteriosclerotic nephritis in the smaller renal vessels. Clinically both types of chronic nephritis are usually associated with cardiac hypertrophy, increased blood pressure and eye-ground changes, and with a urine which contains albumin, blood, casts, or leucocytes. Both types of disease are chronic, and slowly progressive. Chronic glomerulonephritis is a disease of young people. Arteriosclerotic nephritis may occur in young people but is more often found in older people. The clinical differentiation of these types does not depend upon studies in renal function but upon careful history taking and routine physical examination.

As the lesions of chronic nephritis advance, the phenolsulphonephthalein excretion diminishes and the non-protein nitrogen concentration of the blood increases. At present, however, a single observation with these tests gives less prognostic information than does careful clinical examination.

The present treatment of chronic nephritis is largely empirical. The phenolsulphonephthalein test and the non-protein nitrogen concentration of the blood offer means by which physiological methods may be applied to the clinical study of individual cases. Unless the technique of these tests is properly controlled, the interpretation of their results is of little value. When these tests are properly performed, however, they can be used to assemble facts from an individual case which measure the progress of the disease in more or less quantitative fashion, and which make possible the establishment of a logical and systematic form of treatment.

REFERENCES.

[1] Case Records. Edited by R. C. and H. Cabot. Published by Massachusetts General Hospital.
[2] Frothingham: Am. Jour. Med. Sci., cli, 72, 1916.
[3] Stengel, Austin and Jonas: Arch. Int. Med., xxi, 313, 1918.
[4] Frissell and Vogel: Arch. Int. Med., xxii, 56, 1918.
[5] O'Hare: Jour. A. M. A., lxxiii, 248, 1919.
[6] Widal, C. R.: Soc. de Biol., lvii, 301-303, 1904.
[7] McLean: Jour. A. M. A., lxvii, 437, 1917.
[8] Ambard: C. R. Soc. de Biol., xlix, 411, 506, 1910.
[9] Epstein: Am. Jour. Med. Sci., cliv, 638, 1917.

CHRONIC INTESTINAL INDIGESTION IN CHILDREN OVER ONE YEAR OLD.*

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INTRODUCTION.

The peculiarities of diet during the first year of life undoubtedly play a part in the development of the digestive powers of the child, and yet do not always pave the way for the often too sudden and complete transition to a diet widely differing in chemical and physical characteristics immediately following.

The baby's food is simple and liquid; he does not have to prepare it *mechanically* for digestion. Of its component parts, the fats are highly emulsified, and usually from human or cow's milk, whereas later they are not only liquid, as *cream*, but solid, as *butter*, and from many animal and vegetable sources differing considerably in digestibility. The carbohydrates are limited to the universal mammalian *lactose*, rarely other sugars, which require only moderate digestive efforts, whereas later sugars and starches of many kinds, varying greatly in solubility, and requiring a great deal more complex digestive chemistry, enter the diet, and vary in digestibility according to chemical and physical changes brought about by division and cooking. The proteins in the baby's food are those of human and cow's milk, partly soluble and very easy to digest as *whey;* partly insoluble but still readily digestible as *casein*, whereas later, the proteins are from many sources in different forms, as from meat, eggs, and vegetables.

It is, therefore, not only from an academic, but from a practical standpoint, peculiarly fitting to consider the digestive disturbances beginning at the period of greatest dietary revolution, that is, at about one year.

Indigestion is, strictly speaking, the inability to digest. Therefore, the failure to digest any amount of any substance may be spoken of as "Indigestion." On the other hand, a small child should not be expected to digest a pound of fat salt pork. Fat salt pork is obviously too great a tax for his powers. A pound of it is too much, therefore, that particular dose should be regarded as overfeeding, both in quality and amount. Similarly, a child would not be expected to digest a quart of pickles, a raw potato, or dried beef. Such food is unsuitable, or improperly prepared, and should be referred to as "indigestible," and a child so abused not referred to as having "indigestion." In other words, the term "indigestion" should be used only when a child fails to digest a normal amount of food of a normal character, suitably prepared. These factors vary, of course, as the child grows older.

In this paper I shall consider only those cases which do not digest the average amount of the average kind of suitably prepared foods.

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* Read before the New England Pediatric Society, Jan. 9, 1920.

Clinical experience and opinions crystallized from the study of many cases of Chronic Intestinal Indigestion have shown that seldom is more than one component of the food primarily at fault. It has, therefore, been found expedient to consider each component separately, and to speak of "Fat Indigestion," "Carbohydrate Indigestion," and "Protein Indigestion," that is to say, it has become the custom to classify Indigestion according to substance, rather than according to pathology or etiology. This is probably incorrect, but at the present state of our knowledge provides a practical working basis, and as pathological and etiological factors become more clearly developed may be modified to correspond. At present we certainly do not know *why* children do not digest the various food substances; we do not know *what* organs or secretions are at fault; and we do not know *how* they fail to work. All we know is that they *do* fail to work.

FAT.

Chronic Intestinal Indigestion of fat is quite common after the first year. Its cause, or causes are in general not known. From studies of this condition in early life it is reasonable to suppose that some babies are born with a low fat digestion. It is well known that many children stop digesting fat during and after an acute infection, and that long-continued fat overfeeding is often followed by a long-continued inability to digest fat. This suggests that the fat digesting mechanism may become tired out by overwork. It is also a common observation that children with chronic abdominal inflammation, such as Appendicitis and Tubercular Peritonitis, often show a disturbance of fat digestion. In a good many cases a careful history will indicate a reasonably specific event as a possible cause.

The child's appearance is fairly characteristic, usually presenting one or two types. The first evidently has a slight intoxication, too much color, too red cheeks, and too red lips, often mouth pallor, looks feverish, and has little or no appetite. The second is very pale, often bluish, and is extremely flabby. Both types have in common peevishness, irritability, finicky appetite, long-continued stand-still or loss of weight, and irregularity of the stools. A tentative diagnosis is often to be made from the appearance alone, but final diagnosis must rest upon evidence gained from the stools. *The persistent appearance of fat, in excess, over a long period, while the child is on a normal or subnormal fat intake, alone justifies the diagnosis.*

Treatment depends upon several factors. If the child has an obvious focus of infection, that *may* be at fault and should be removed. Surprising changes for the better often take place on removal of diseased tonsils or adenoids, cleaning up an old otitis media, or a chronic appendix. In most cases, however, we are not so fortunate, and must treat the digestion. Inasmuch as there is yet no known way of making a child digest fat, the easiest way to relieve the symptoms is to remove the fat from his diet entirely. When this is done two things happen. First and probably most important, the fat digesting mechanism is rested; second, irritating and possibly poisonous by-products of faulty fat digestion are removed from the intestine, thereby allowing the child to feel better, and probably to be better. It is probable, also, that a serious loss of salts is thereby prevented.

Inasmuch as fat is only one kind of fuel, and inasmuch as the necessary body fats can be manufactured from carbohydrates, its place in the diet is theoretically not indispensable. As a matter of common experience it can be replaced by an equal value of carbohydrates, as sugars and starches, for an indefinite period. Therefore, there is no urgent need of resuming fat for a long time.

Whereas in the treatment of babies, fat starvation may be necessary and advisable for days or weeks only, in the treatment of older children it is often necessary for weeks and months, and in some cases, usually referred to as "historic," years. I am sure that some of these have graduated by age limit from the Pediatrician to the Internist!

In the last several years much work has been done in feeding to these children fats previously uncommon in the pediatrist's dietary, namely, olive oil and other vegetable fats, and animal fats. (Ladd.) Whether these fats are really more digestible, or less poisonous in the intestine, I do not know. I do know that others have obtained, in many cases among babies, results hardly short of marvelous. Most of the older children dislike the taste of these fats and will not take them.

It seems quite reasonable that a very fine emulsion of fat shall be more digestible than a coarse one. Clinical experience shows that the fat of a milk mixture, run through a homogenizing machine, is slightly more digestible. The difference is slight, but occasionally is all that is needed.

In the main, however, the child should be deprived of fat for a long time, the length of time and completeness of privation to be governed by the general condition, constantly keeping the fat intake so low that *less* than a normal amount appears in the stools.

CARBOHYDRATE WITHOUT FERMENTATION.

The most common of chronic intestinal indigestions is that of Carbohydrates. It presents several phases, which, for purposes of study, I have elected to group as follows:

1. Simple indigestion, *not associated with fermentation.* The cause may usually be discovered by a careful analysis of the child's diet. Infection, however, and lack of chewing or lack of cooking are often factors. A diet too low in protein is often associated.

In a few cases a particular food,—oatmeal in one, carrots in another, wheat in another, etc., fails to be digested. There are no constant uniform symptoms. The diagnosis is made by finding large amounts of starch in the stools of normal children.

The condition is important only in providing circumstances favorable to the development of more serious disturbances in the future. Treatment consists of reducing the total starch intake; finding and eliminating any particular starch not digested; making the food more digestible by fine division and thorough cooking; and by making the child *chew*. This is best done by giving "dry" meals. (If a child cannot wash his food down, he has to chew it!)

Occasionally, sugars are at fault. The characteristic symptom of sugar indigestion, without fermentation, is diarrhea. The stools are acid and quite irritating. Reduction or elimination of sugar results in cessation of the symptoms.

CARBOHYDRATE WITH FERMENTATION.

2. While the above are met with occasionally, carbohydrate indigestion with fermentation is far more common. Inasmuch as it is axiomatic that fermentation is associated with bacterial activity, and inasmuch as it is probable that a number of organisms play a part in fermentation, I have elected to consider this type by groups as follows:—in relation to the organisms found, and to special symptoms associated with the presence of that organism.

a. Associated with simple fermentation.

A large group of organisms act under favorable circumstances upon carbohydrates to produce *gas*. These conditions are found in the child's intestine. Reaction of the intestinal contents and antagonistic bacteria presumably play a part in the extent of their activities. In simple fermentation a fairly characteristic picture is presented. The child is usually under weight; its color is poor, usually sallow; it has a "pot belly" full of gas; usually a large fatty liver; and its skin is pigmented. This pigmentation is characteristic of all cases of carbohydrate indigestion; is most evident on the sides of the neck, on the flanks and on the abdomen. It is not tan, although it looks like it, and it is not racial. The stools are large, spongy, often loose, usually acid, often foamy, occasionally containing bits of mucus, and usually containing much starch, erythrodextrin and cellulose.

Treatment should be aimed at reducing the carbohydrate intake to below normal, and making the carbohydrates given as digestible as possible. The simple, finely divided starches such as white bread, plain crackers, cereal jellies, well-cooked cereals and macaroni, are best. Vegetables should be omitted altogether for weeks, and then tried cautiously. The child's teeth should be put in order and he should be made to chew. The protein intake is usually low and should be increased, both for the general needs of the child and on account of favoring the growth of bacteria antagonistic to fermentative organisms. Experience has shown that the lactic acid bacillus is quite antagonistic to these organisms and that even very young children will take moderate amounts of buttermilk without serious objection. Six or eight ounces daily will usually be of considerable benefit. It is usually unwise to substitute sugars for the starches.

GAS BACILLUS.

b. Associated with special organisms.

Special organisms may produce or be associated with chronic carbohydrate indigestion. Most common of these is the Gas Bacillus. Kendall first called attention to it in this country as one cause of Infectious Diarrhea. In older children the organism is probably always present, and in small numbers is not significant, but in children under three its presence is almost always associated with symptoms. These are more severe and last longer than those of the previous type. There is often a story of infectious diarrhea in the past. The pigmentation is present, as in all chronic carbohydrate disturbances, but in addition the skin is yellowish, particularly about the cheeks and ears. These cases have often been treated very carefully for a long time for carbohydrate indigestion without great improvement. In fact, they fail to improve as long as the gas bacillus is present in appreciable numbers. In other words, when the gas bacillus is present they do not digest starch and they have symptoms; when it has been gotten rid of they do digest starch and they do not have symptoms.

Treatment aims at getting rid of the organism. Inasmuch as the organism must have available carbohydrates to live on, it must be starved. This can be done by feeding the patient soluble carbohydrates, such as sugars, which are absorbed high in the intestine, in place of the insoluble starches which remain unchanged quite low in the intestine. Inasmuch as the organisms prefer an acid reaction, the intestinal contents should be made alkaline by means of a high protein diet. This may easily be done by giving large amounts of milk, egg-whites, and meat. It is probable that the intestine with an alkaline reaction and a large amount of protein favors the development of organisms that are hostile to the gas bacillus. Clinical and bacteriological experience has shown that the living lactic acid organisms have a very active antagonistic action upon the gas bacillus. Inasmuch as cultured lactic milk combines a *high protein* value and enormous numbers of lactic acid organisms, large amounts of fat-free lactic acid milk may be given. Experience has shown that without lactic acid bacillus weeks or months of active treatment may not bring about the disappearance of the organism, whereas with it, the gas bacillus may disappear in a few days. Treatment should be kept up for months, however, and *no starch whatever* given as long as the gas bacillus is present in the stools. When the tests have been negative for a week or ten days, simple, well-cooked starches, such as cereal jellies, and plain crackers, may be given very cautiously. Inasmuch as these children often have an associated fat indigestion it is wise to limit the fat intake to amounts that they can comfortably take care of, as shown by repeated examinations of the stools.

It must be borne in mind that when starch is removed from a child's diet and at the same time the fat intake is low, the fuel values of that diet are altogether too low for the child's needs. This is especially true in winter. It is rather hard on the child's protein-digesting mechanism to be required to provide fuel from very greatly increased amounts of protein alone. Therefore, sugars should be used to supplement the total fuel value, and when lactic acid milk is being given, surprisingly large amounts can be used without disturbance. In many cases, it is wise to give a mixture of various sugars, rather than a large amount of any one sugar.

BUTYRIC ACID.

A second type of chronic intestinal indigestion with fermentation is that associated with the production of butyric acid. As yet it is not certain just how this comes about. Butyric acid is essentially derived from the breaking down of fats. This may occur in many chemical reactions, and is often one result of bacterial activity upon mammalian fats. An organism, the Bacillus Butyricus, has, in fact, been named for this specific action on mammalian fats and is normally found in the intestine. *Chemically* speaking, there is no known way of producing fat from starch or other carbohydrates. Nevertheless, many varieties of *bacteria* are known to produce fats from carbohydrates.

These cases are very rare and present characteristic symptoms. Physically, children with this type of indigestion are much under weight and undersized; are very thin and flabby; are not so much peevish and irritable as whining with seeming discomfort. They have a peculiar bluish, waxen color and do not have as much pigmentation proportionate to the severity of the condition as would be expected. They have enormous abdomens with much gas and intestinal fluid. They have repeated upsets, characterized by vomiting and diarrhea, occasionally fever, which are rather more severe than those seen in other types of indigestion. They have usually been treated for a long time by competent men as cases of chronic fat indigestion and intolerance.

In the five cases that I have seen at the time of an acute upset, the children were so critically ill, and their bellies were so full of fluid, that I made a diagnosis of severe Tubercular Peritonitis, at my first visit. In one case, I gave that as an unqualified diagnosis and told the parents that the child would die in a few days of general Tuberculosis. (She was fat and rosy in two months!) The most characteristic evidence lies, however, in the stools. When the child is not acutely upset there are three or more, daily, large, spongy stools, with large amounts of food relics, considerable fat, and smelling moderately of butyric acid. During an acute attack, the stools are eight or ten a day, large in amount, watery or spongy, intensely acid, and contain all food elements in large excess. The two most characteristic features are the presence of butyric acid, as shown by the *odor of vomit,* and fat, *greater in amount than is consistent with the fat intake.*

Just where this fat comes from is not clear. It is reasonable to suppose that when a child, whose fat intake is limited to the fat in "separator" milk and the tiny amount occurring in starch, persistently shows considerable fat in the stools, that fat is produced as a result of chemical or bacteriological action in the intestine. It is possible, however, that the fat is derived from the intestines themselves. Chemically speaking, it is impossible to produce butyric acid from starch, yet if we assume that *fat* is formed from *starch,* the production of butyric acid is accounted for. The fact that cases of ordinary fat indigestion do not show butyric acid in the stools invites the speculation as to whether organisms are not able to attack fat in the process of formation in the intestine more readily than preformed fat. These points, however, are for future study to determine.

Treatment is ridiculously simple. It consists of withholding all starch for an indefinite period, and replacing the starch with sugars. Inasmuch as all of these cases that I have seen have been previously treated for a long time for fat indigestion, I have gone very slowly in resuming fat. I have been constantly surprised to find that each case had a normal fat digestion only a few months after omitting starch. As there are general grounds for considering this condition a result of bacterial activity, of the carbohydrate fermenting groups, it has been my custom to give buttermilk on general principles. Whether that has anything to do with their improvement, I do not know. They have been so sick and miserable that I have not dared to try to do without it.

PROTEIN.

A rare type of chronic intestinal indigestion in childhood is the chronic inability to handle reasonable amounts of *protein.* In some cases it appears that the child's need for protein is very low; in others, that its ability to utilize vegetable protein is very high, as seen in oriental and tropical races. As seen in the average hospital clinic, however, the ability to handle protein is quite high and disturbances of the protein digestion quite rare.

Other than previous infection, no definite cause has been determined. Symptomatically, these children are rather under par generally, and of small physique. They are universally bad tempered and sleep poorly at night. In the absence of signs of carbohydrate indigestion, they are unique. Diagnosis depends upon the examination of the stools. They are, macroscopically, usually small, very foul or musty in odor, and contain large bean curds which are derived from casein or possibly egg-whites. Occasionally, while normal in appearance, they will be seen to contain, microscopically, large amounts of yellowish, paving-block-shaped particles which are finely divided, undigested casein. It is unusual for these children to show much undigested meat in the stools.

Treatment should consist in reducing the child's protein intake to conform with its lowest possible protein needs, and in making that protein as digestible as possible. Any particular protein, shown to be undigested, such as eggs, certain meats and certain vegetable proteins, should be omitted altogether. In severe cases (not acute), it may be remembered that the soluble protein of cow's milk, whey, is not coagulable and is very digestible. The main objection to whey is, that to get a sufficient quantity of protein from it, a child must take enormous amounts of it. Casein itself may be made considerably more digestible by cooking, which alters its chemistry, so that in the stomach and intestines a finely divided, instead of a large curd is formed. The same result is obtained by the action of lactic acid, which prevents the formation of large, tough curds. The whites of eggs may be rendered considerably more digestible by beating up with orange juice. This theoretically makes an acid albumen which practically prevents the formation of large egg-white coagula in the stools. The meat should be very finely ground and thoroughly chewed. Theoretically, finely ground raw meat should be more digestible than finely ground cooked meat. I have not been able to note any appreciable difference.

Fats and carbohydrates can usually be given in increased amounts, and inasmuch as carbohydrates act as "protein-sparers," thereby reducing the amount of protein used up, carbohydrates can profitably be increased to the limit of tolerance, as shown by the examination of the stools. In my experience, chronic protein indigestion is not "cured" by reducing the amount of protein in the diet. The condition is apparently more or less permanent.

DEFICIENT SECRETIONS.

In most cases of chronic intestinal indigestion, only one element is at fault, although often a second element is poorly digested as a result or companion of the first. Occasionally, but fortunately rarely, a case is seen in which all the elements fail to be digested in amounts large enough to keep the child going. He does not grow; he often loses weight for long periods, and in spite of most careful study and treatment, he often dies.

The cause is not known. Such cases are seen in infancy and give rise to the feeling that they were born with poorly developed digestions. In the cases seen among older children, there is often a story of severe illness,—quite frequently a long infectious Diarrhea. There are no characteristic physical symptoms, except great underweight and undersize. Careful study of the stools in relation to the diet shows a constant excess of all the elements of foods. It is reasonable to assume that the digestive reagents in these cases are so diminished in amount or quality that they fail to do enough work to satisfy the patient's needs. Therefore, this type of case is referred to as Chronic Intestinal Indigestion of the "Deficient Secretions" type.

Treatment consists in finding and giving the largest amounts of the most digestible foods which can be tolerated by the patient. This means a careful study of the energy- and growth-needs of the child, correlated with frequent examinations of the stools to prevent giving excess, and in bringing into play all the factors of treatment used in the previously described types of indigestion. It usually means giving low fats, high, even very high mixed sugars, and soluble starches, finely divided and chemically changed proteins.

HERTER'S INFANTALISM.

In 1910, Herter of New York described ten cases which he had studied, and called them "Infantalism." The children were underdeveloped, much under weight, and were all right mentally. They presented evidence of great digestive disturbances. Herter described an organism which he found in the stools of all these cases, and called it Bacillus Infantilismus. A careful analysis of his communication would indicate that he had described extreme cases of fat indigestion, of carbohydrate indigestion with fermentation, and possibly of protein indigestion. The existence of B. Infantilismus has not been confirmed by others, and has not stood the test of time.

CHRONIC INTERSTITIAL NEPHRITIS WITH INFANTALISM.

Still another type is very rarely seen, which presents evidence of malnutrition, and in which study reveals various abnormalities of digestion. These are usually called "chronic intestinal indigestion," and treated as such for a long time without material benefit. The blood pressure is found to be very high, and careful examination of the urine reveals a picture strikingly like that of Chronic Interstitial Nephritis in adults. It is probable that their indigestion is secondary to their nephritis.

CONCLUSION.

I have purposely refrained from mentioning the use of medicines or the active digestive substances borrowed from animals. There is nothing more fascinating than to watch starch fade to sugar, and meat disappear, under the action of these digestants in a test tube. There is nothing more disappointing than to see the same old food particles appear in the stools, and the same old symptoms continue, after giving children *ounces* of these digesting substances, even though they are chemically treated so as to be protected from the stomach juices. There is no such high road to success. *Each case must be individualized.* It is probable that all will be somewhat improved upon careful regulation of the diet based upon general principles,—but few will really get well.

While it is unquestioned that the classification attempted is both unscientific and incorrect, yet experience has shown that cases grouped and treated as described, do very well in most instances. Treatments are necessarily merely outlined, as each case must be studied in detail from many sides, thereby acquiring a knowledge of each individual's needs in relation to his digestive peculiarities. This means the gradual accumulation of a mass of information gained by careful attention to details over a long period,—and presupposes as requisites to its attainment a working knowledge of metabolism, the physiology of digestion,—the chemistry of stools, and of food values. This is indeed drudgery, but I know of no similar amount of drudgery that gives such a satisfactory reward in the end.

DISLOCATION OF THE CARPAL SCAPHOID.

By William Pearce Coues, M.D., Boston.

Although dislocation of the semilunar bone and fracture of the carpal scaphoid are at the present time well known injuries and much has been written concerning them, yet the traumatic derangements of the carpus as a whole have received but comparatively little attention.

Dislocation of the carpal scaphoid alone, or associated with semilunar dislocation or fracture is one of the rarest of injuries. Though isolated instances of dislocation of all the carpal bones have been recorded, this injury is not mentioned in many of the text-books dealing with fractures and dislocations.

In the recent illuminating article by Jean and Albert Mouchet[1] on "Mechanisme de Traumatism du Poignet" there is much that is interesting in this connection, and reference to scaphoid dislocation is briefly made. These authors quote Destod, Lavoyenne and Gaulier, who speak of certain torsions of the wrist which may produce a subluxation of the scaphoid, or semilunar-scaphoid derangements.

The former authors remark that it is no exaggeration to say that the surgeon generally sees but the lesions at the lower end of the radius, and that the carpus is still an anatomic part which, except in a few instances, is "terra incognita." They aptly say, "An unrecognized fracture of the radius often does more harm to the surgeon than to the injured one, but missing a dislocation of the os magnum condemns the patient to a serious disability."

Eigenbrodt[2] was one of the first to make a study of obscure carpal injuries, after the discovery of the roentgen ray. In his article he reviewed much of the old literature concerning the subject.

More recently Hessert[3], and Codman and Chase[4] have written extensively on the subject of carpal injuries, with particular reference to fracture of the scaphoid.

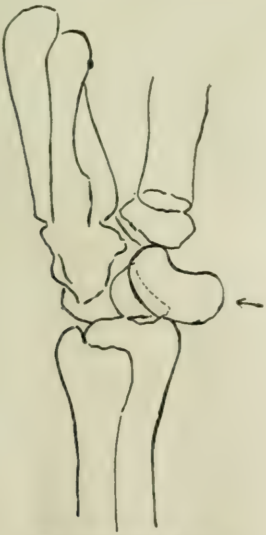
The scaphoid, as has been previously pointed out, really belongs to both rows of carpal bones, its position varying much with different positions of the wrist. This dual function is an important key to the mechanism of some carpal lesions.

Probably somewhat similar application of force to that which produces the *luxation subtotal du carpe, retro-lunaire,* described by Jean and Mouchet is at times the cause of dislocation of the scaphoid, singly, or accompanied by other carpal injuries. This is usually a fall from a height, the blow being received on the "heel" of the hand, in forced hyperextension. All those who have studied the question agree that scaphoid dislocation is usually the result of a fall from a height on the hyperextended hand. The accident is apt to occur to carpenters, painters, roofers, and aviators. In such injuries if the radius does not give way the force of the impact is transmitted to the os magnum through the dorsal corner of the semilunar, which brings pressure on the neck of the scaphoid while the anterior part of the capsule fixes the bone at the centre. Ordinarily from this force a fracture through the neck of the scaphoid results. Probably in the case of dislocation there is a prying and squeezing force transmitted through the magnum and semilunar, to force the scaphoid out of its bed.

REPORT OF CASE.

F. L., a carpenter, 54 years of age, was examined for the Massachusetts Industrial Accident Board on April 7, 1919. The history of the accident in brief was as follows: On January 20, 1919, he was descending a ladder from a staging, when he slipped, falling a distance of some 20 feet, to a concrete floor. Besides the injuries to the left wrist which are of present interest to us, he received a depressed fracture of the right frontal bone, and a fracture of the head of the right radius. He was unconscious for some time after the accident and received hospital treatment for some three weeks.

There was a history of good health and the patient had received no fractures previously. There was found on examination a depressed fracture of the right frontal bone, and a fracture of the head of the right radius, with much new bone formation about the elbow joint and practically no motion. There had been inability to use the left wrist since the accident, and complaint of aching, stiffness, and general disability of the hand. Examination showed marked bony thickening about the wrist, the styloids practically on a level. There were only a few degrees of active motion at the wrist joint in any direction, and attempts to increase this passively, caused pain. The thumb and fingers are stiff, he is just able to oppose the thumb to the index finger, and cannot flex fingers into palm. The grasp of the hand is weak, and rotation of the radius is restricted. On the palmar aspect of the wrist, just below the end of the radius, is a marked bony prominence. This is immovable and seems to block the wrist motions almost completely. It corresponds in general level to the situation of the carpal scaphoid. Radiographic examination showed the lower end of the radius was fractured, and there was complete dislocation of the scaphoid, with some displacement of the semilunar.



DISLOCATION CARPAL SCAPHOID.
Lateral view. X-ray tracing.

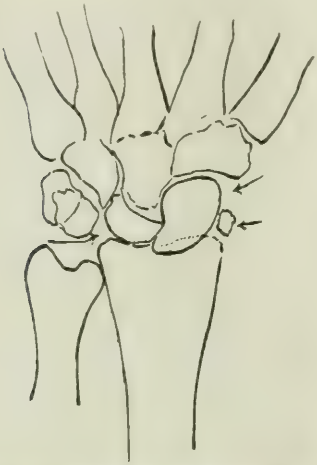
A subsequent examination (clinical) showed the bony mass on the palmar aspect of the wrist exactly the same as at the previous examination. The motions of the wrist were somewhat better, but the wrist was not in a condition to be of use to the patient. It seemed as if operation would give the only reasonable chance for a useful wrist. On account of the condition of the other arm the patient would not consider this.

Among the few cases of carpal scaphoid dislocation reported, those of Hessert[3] and Kleinberg[5] more nearly parallel the one reported above than any others. In these two cases the dislocation was produced by the same type of violence, a fall from a height.

The report of Hessert's case is as follows:

A painter, 25 years of age, with a negative history previous to the accident, fell while at work on a scaffolding a distance of four stories, his fall being interrupted by several obstructions before he finally struck the ground with hands extended. He was unconscious for a time and was removed to hospital, where it was found that the injury to his wrist was the only important one. A diagnosis of fracture of the lower end of the radius was made and the arm was splinted. Hessert saw the patient four weeks after the accident. At this time there was marked disability of the hand. The fingers were flexed, and the patient could not pick up objects or move the fingers at all. Active and passive motion at the wrist was very much limited. On the palmar aspect of the wrist there was an oblong swelling, the upper part being most easily seen. It was rounded in shape and extended 4 cm. above the styloid of the ulna. There was no sensory disturbance present, but there was atrophy of the hand muscles. An x-ray showed the scaphoid and semilunar bones displaced far from their original positions, and separated from their ligamentous attachments. Operation was done and the bones were easily removed. Considerable improvement in the condition of the hand followed, and the man was able to handle a brush and grasp objects.

Kleinberg's[5] case was that of a laborer who fell from a fifth story window, injuring his left wrist. It was not possible to obtain a history of the position of the hand at the time of the injury. Kleinberg saw the patient seven weeks after the injury. At that time there was pain, swelling and disability of the wrist, hand and fingers. A mass of bone was easily palpable at the front of the wrist. It was directly under the skin and was freely movable in the lateral, but not in the vertical direction. Dorsum of the wrist was moderately swollen, with no hollow. There was no voluntary motion in the wrist, and there was 20″ passive flexion. The man could not hold even a light object in his hand. X-ray examination showed a dislocation of the scaphoid and semilunar bones upward and forward to a position anterior to the ulna and radius. The scaphoid was entirely above the radio-carpal line. At operation both bones were easily removed, being imbedded in subcutaneous tissue. Immediate improvement was very satisfactory. Function rapidly improved, so that the patient was able to grasp and hold a five-pound dumb bell. The outlook for full restoration of function seemed good.



DISLOCATION CARPAL SCAPHOID
Ant. post. view. Note chip fracture radius. Partial dislocation semilunar.

In connection with this and allied injuries the experiments of Honigschmied, which are quoted by Hessert are of interest, though they were performed relatively long ago. Other experimental work in this connection has not been done to any great extent.

Honigschmied experimented on the cadaver and forcibly extended the hand in 19 cases. A fracture of the lower end of the radius resulted in 17. In two cases no fracture resulted, but there was rupture of the anterior ligament of the wrist with anterior dislocation of the semilunar bone. In eight cases a preliminary dissection of the wrist was made before subjecting it to hyperextension. In five cases the palmar capsule was lacerated. Twice the scaphoid was partially dislocated and once the ligament between the two rows of carpal bones was torn, no carpal fractures were produced. Hyperflexion of the wrist was tried 25 times without previous dissection. In ten cases there was rupture of the dorsal carpometacarpal ligament. In seven cases there was partial separation of the dorsal capsule of radio-carpal joint and rhomboid ligament. In six cases rupture of the ligaments between the two rows of carpal bones resulted, and twice partial dislocation of the head of the os magnum was produced.

Much stress has been laid in evolving theories as to the mechanism of semilunar displacements on force transmitted through the middle metacarpal bone and os magnum to the semilunar in forced hyperextension.

It would seem that in the case of scaphoid dislocation from forced hyperextension that intercarpal ligamentous rupture with lateral torsion of the wrist would best account for this unusual injury. The bone is probably suddenly squeezed out of its bed as one "shoots" the stone from a cherry, as is so graphically described by Eigenbrodt in explaining the mechanism of dislocation of the semilunar bone.

REFERENCES.

[1] Jean et Albert Mouchet: Presse Médicale, Vol. xliii, 603-5.
[2] Eigenbrodt: Beit. Jur. Clin. Chirurg. Tubingen, 1901, 805.
[3] Hessert: Ann. of Surg., xxxv, 11, 402-14.
[4] Codman and Chase: Ann. of Surg., 1905, Vol. xli, 322-62.
[5] Kleinberg: Jour. A. M. A., Vol. lxxiv, No. 5, p. 312.

NOTE ON UNCOMPLICATED FRACTURE OF THE ZYGOMATIC ARCH, WITH REPORT OF TWO CASES.

By Frederick W. O'Brien, M.D., Boston.

Clinicians consider uncomplicated fracture of the zygomatic arch a rarity, very probably because such fractures are usually accompanied by so little impairment of normal function that the injured person seldom seeks medical consultation.

Two cases of this type of fracture recently examined by me privately within three days are worthy of note. In one there was evidence of but slight trauma and in the other a history of pain and swelling following the extraction of an upper molar tooth.

It is a common occurrence for a roentgenologist to be asked by his patient if there is any danger of x-ray burn during the exposure. I am sure all answer with a certain superior air, "No," yet wonder in their hearts why it is that insurance companies demand an extra premium on liability policies of roentgenologists.

It is equally common for the dentist to be warned by his patient, prior to an extraction, to be careful and not break his jaw. I am sure he, too, receives this admonition with a smile and as something superfluous. Statistics are not available to determine the frequency of fracture in relation to extraction, though I have no doubt that fracture of the zygomatic arch during tooth extraction must be extremely rare.

Todd has examined some 467 skulls. Where the injury was restricted to the zygomatic arch he found the types of two degrees, depression of the arch and fracture dislocation. Depression alone of the zygoma, usually most pronounced at the temporomalar suture occurred sixteen times, the injury being on the left side in ten cases and on the right in six. Both of the cases here reported were on the right side.

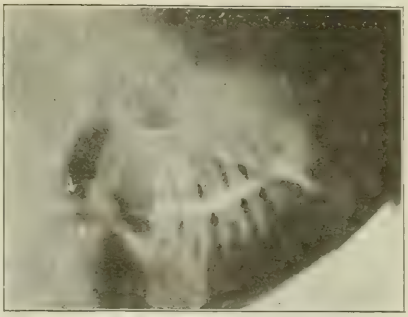
The more severe form in which fracture of the arch or dislocation at the temporomalar suture occurs was present fourteen times, twelve times on the left side and only twice on the right. Fracture may occur in the temporal part of the arch or in the malar part, or both; but Todd never saw the temporomandibular joint involved.

If there is sufficient trauma, local extravasation and swelling may obscure the actual condition of the bones on inspection. Some temporary disability in the action of the masticatory muscles may result, but in injuries confined to the zygomatic arch there is not apt to be any concussion as from a knock-out blow because of the architecture of this part of the face. Todd indicates the effect of a blow on the zygoma or outer border of the orbit as localized by the fragility of these bones and is not transmitted to regions further afield as is the case with the mandible.

Though injuries to the zygoma often pass unnoticed and when found may seem unimportant, it is to be remembered that permanent impairment of a degree may result.

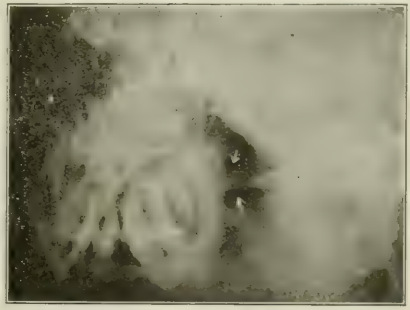
Crushing in of the zygoma may effect the movements of the temporal muscle. Osteophytic growths in the attachments of the temporal muscle and fascia have been reported, also arthritis of the temporo-mandibular joint.

Case 1 (Fig. 1). Male, F. M., referred, December 2, 1919, for examination of the right mandible with special reference to the temporomandibular joint. Patient gave a history of riding in a street car on a rear seat of the type that is lengthwise to the body of the car when it stopped suddenly and he was thrown sideways, his cheek striking the cross seat at his right. He complained of pain on mastication. There was some limitation of motion on opening the mouth, but no visible swelling or infiltration of the tissues. Examination by a competent dentist showed malocclusion. X-ray examination showed a definite fracture of the zygomatic arch, malar portion.



Case I. Fig. 1.

Case 2 (Fig. 2). Female, Mrs. J. A. F., referred December 5, 1919, for examination of the right upper jaw. She presented evidence of swelling and infiltration of the soft parts of the right cheek in the malar region and gave a history of extraction of an upper right molar a few days before, followed by pain and swelling of the face. X-ray examination showed a fracture of the zygomatic arch with considerable displacement of the fragments.



Case II. Fig. 2.

Bibliography.

Todd: Injuries to the Malar Bone and Zygoma. Annals of Surg., Vol. lxvii, p. 403, 1918.
Doyen: Fracture du tiers posterieur de l'arcade zygomatique. Arch. de Doyen, Paris, 1910, Vol. 1
Williams: Fracture of Zygoma. U. S. Naval Bull., 1911, v, 431.
Gibson: Fracture of the Zygoma. Ann. of Surg., Q. 1912, iv, 457.

Clinical Department.

THE TOOTH BRUSH AS A CAUSE OF REPEATED INFECTIONS OF THE MOUTH.

By Carolus M. Cobb, M.D., Lynn, Mass.

The presence of foci of infection in the mouth and throat is too well established to be open to argument. That these foci may lead to disease in distant parts of the body is also well established. There is a very general tendency to remove the offending organ when it is proved to be the seat of a focus of infection. This is done without any very serious attempt to find its cause. The attitude of the profession seems to be to find the focus and cut it out. The patient is then expected to recover promptly from the secondary disease without further treatment. Of course, he very often does not, but that is thought to be the fault of the patient and not of the doctor.

It should be remembered that a focus of infection does not just grow, like Topsy, but that something caused it; and if not corrected it may cause another. Therefore, it follows that any treatment which will prevent the formation of these foci is worthy of most careful consideration. It is not the purpose of this paper to discuss the whole question of foci of infection in the mouth and throat, but to call attention to a possible cause of some cases of chronic infection of the mouth. Perhaps I cannot do better in the way of illustration than to give the details of a case which I feel sure can be duplicated by many medical men.

E. C., aged 26, had suffered from repeated attacks of infection of the mouth which always extended to the throat. These attacks were followed by mild rheumatic symptoms. Painting the gums with iodine or guaiacol would control the attack within a few days and the rheumatism was relieved by the salicylates. These attacks occurred not once but many times. There was no evidence of a focus of infection about the teeth and the case seemed a mystery which would be cleared up only by the removal of all of a set of perfectly good teeth. Finally it occurred to me that the tooth brush might be the offender. This, by the way, was used religiously several times a day. Therefore, I advised that the tooth brush be sterilized by soaking it in alcohol both before and after using. The brush, still wet with alcohol, was used to clean the teeth. This proved to be a solution of the mystery.

The history of this case is "significant of much," and I cannot see why it may not explain much of the persistent infection of the mouth and, perhaps, many cases of pyorrhea. It is not a particularly easy job to sterilize a tooth brush and as it is commonly used several times a day it does not become dry from one using to another. All the germs common to that mouth can and do grow on the bristles and the victim when next he uses the brush, rubs into his gums a culture of the flora of his mouth. It is evident that the long continued rubbing of such a culture into the tissues of the mouth may have a serious effect.

Tooth brushes as they are made today cannot be sterilized except by antiseptic solutions, and all of these are disagreeable and many of them are dangerous in untrained hands. Alcohol is the safest and the most convenient to use, but alcohol is hard to get. The happy solution of the problem would be for some one to invent a brush which would hold a piece of cotton or felt which could be thrown away after it was once used.

New Instrument.

PRACTICAL MOUTH HYGIENE.

By Arthur Clarence Jacobson, M.D., Brooklyn, N. Y.

In our personal hygienic ritual there is nothing more important than the daily cleansing of one's teeth, yet it cannot be maintained that present methods of attaining good buccal hygiene leave nothing to be desired.

With the toothbrush as now used we succeed in doing little more than removing some and redistributing more of the buccal detritus that accumulates upon the teeth, affecting the viscous film but little, and depositing a certain amount of the powders or pastes commonly employed. This is chiefly because of the impossibility of getting enough water into the mouth through the medium of the brush wherewith properly to wash it out. The methods in vogue are undeniably primitive, inadequate and irrational.

If the cleansing of the teeth of persons in good health is unsatisfactory, what shall be said of the buccal hygiene of sickness? The nurse finds this a great bugbear at the bedside.

The writer wishes to present two new and simple devices made of rubber tubing which supplement the toothbrush, making available a sufficient supply of water, and thus rendering unnecessary the futile attempts to irrigate the teeth during the cleansing process by frequent wettings of the brush. They make perfected cleansing of the teeth a reality, recalling, in a sense, the function of Carrel's tubes.

One device (Fig. 1) consists of a long length of small tubing cemented upon a short length of larger tubing, which latter is slipped over

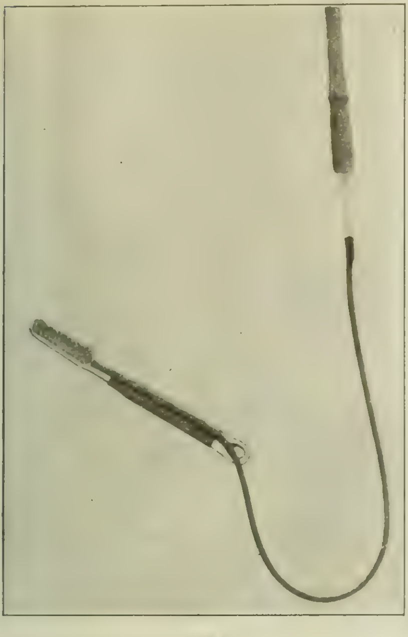


Fig. I.

the handle of the toothbrush, the smaller tubing lying over that part of the handle at the end of which are the bristles.

The long length of small tubing is connected with a larger tubing which attaches in turn to an irrigator.

The teeth may be brushed in the usual manner with the preferred paste or powder (though not strictly necessary), the rubber device, which fits any type of toothbrush, being then slipped over the latter's handle until the end of the small irrigating tube is in contact with the proximal end of the bristles, and the clip upon the large tubing attached to the irrigator released. The flow of warm water through the small and soft irrigating tube is thereafter controlled by pressure of the thumb against it and the handle of the brush.

The upper and lower teeth upon the left side are brushed with the right hand, the usual upward and downward and rotary motions being employed, and the corresponding teeth upon the right side are brushed with the left hand, the head being well tilted accordingly, to keep the side of the mouth undergoing cleansing well filled with water. The front teeth and all inner surfaces may be washed using either hand. Closing the lips upon the handle of the toothbrush during its use will, of course, give a larger amount of water with which to operate, the thumb now and then shutting off further supplies until the mouth has been emptied of the used water. The whole cleansing process may be carried out, however, with the mouth open and the water flowing in and out continuously.

After cleansing of the teeth by this method, they are entirely free from film and detritus, and the individual is pleasantly conscious that they have been properly brushed.

In the case of not very ill bed patients the irrigator may be hung at the head of the bed upon a portable post or upon the bedpost, the patient resting upon his right elbow while washing the teeth upon the right side with his left hand, and upon his left elbow while washing the teeth upon the left side with his right hand, the water being received in a suitable pan.

For very ill patients, the device in Figure 2 may be employed. This device permits the attendant to cleanse the teeth with the same full water supply as in the toothbrush method, but for the latter utensil the finger endowed with intelligence is substituted, protected by a

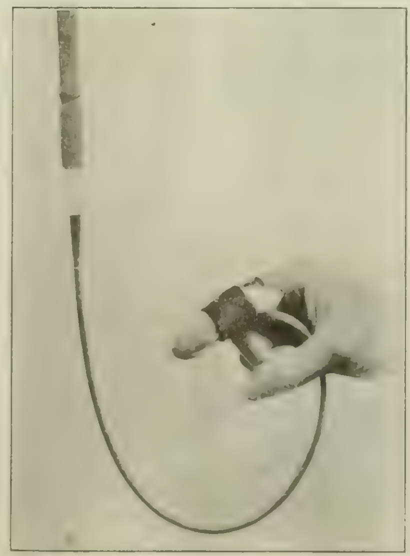


Fig. II.

cot from contamination. An antiseptic solution is employed instead of pastes and powders.

Over the right index finger is placed a cot, over this two square pieces of gauze cut from a four-inch bandage, and over all the device itself, consisting of a one-inch section of large tubing within which is cemented one end of a long length of small tubing. The small tubing delivers the water directly to the gauze on the end of the finger. The flow is subject to thumb pressure.

All the teeth may be gone over with this device without changing the elected position of the patient or the finger employed.

Instead of using two pieces of gauze one may, if preferred, use a layer of cotton between the cot and a single piece of gauze.

For children, the writer employs a small size of this device, placed upon the little finger.

This second device is excellent for the ordinary toilet of the teeth, either used alone or after the customary brushing, since it removes film very thoroughly.

These devices are so cemented as to withstand disinfection by boiling or otherwise.

The dream of a toothpaste that will "digest" or otherwise conquer dental films may as well pass in the face of these simple methods. The passing of the toothpaste or toothpowder itself is a desideratum, in the judgment of the writer.

Perfected methods of cleansing the teeth would undoubtedly lessen the incidence of dental pathology and its remote consequences. But upon esthetic grounds alone their desirability cannot be gainsaid.

Book Reviews.

Diseases of Women. By Charles Montraville Green, A.B., M.D. Boston: W. M. Leonard. 1920.

The second edition of *Diseases of Women,* including discussion of abnormalities of pregnancy, labor, and puerperium, and presenting a clinical study, with case histories, of pathological conditions characteristic of the five periods of a woman's life, will prove to be of great value to teachers, medical students, and graduates. As in the first edition, the book is arranged logically in five sections, dealing with infancy and childhood, puberty and adolescence, maturity, the climateric, and anility. Each division is preceded by an introduction, and the functional disorders, malformations, infections, and neoplasms occasionally brought to the gynaecologist's attention are commented upon in relation to the epoch in a woman's life during which they most frequently occur. The one hundred and seventy-three case histories which compose the body of the book are grouped in the five sections to illustrate the various diseases and conditions which have been observed among patients. In each case are recorded the diagnosis, treatment and result, followed by comments emphasizing the most significant facts and the lessons which may be learned from the author's observation and experience. This method of recording case histories in writing was developed by Dr. Green during his teaching of obstetrics in order to convey more thoroughly than is possible by the clinical method alone the lessons he has learned from actual experience in practice.

The work has been improved in its second edition by certain textual revision, and in addition by extending comment on a number of cases, including myoma of the uterus, cardiac disease complicating pregnancy, and vulvovaginal injuries from coitus. The sexual relations of husbands and wives have been commented upon, and suggestions made as to advice which may well be given to prospective husbands. The text is illustrated by twelve full-page plates, one cut, and twenty-five charts. This edition will prove to be of even greater value and service to the profession than did its excellent predecessor.

Early English Magic and Medicine (British Academy Address.) By Charles Singer. London: Oxford University Press. 1920. 8°, 34 pp.

This is a study based upon original investigations covering some 15,000 hitherto unexplored manuscripts. Early British medicine was mainly magic and folk-medicine. The domination of European thought by Moslem learning, which set in about the 12th Century A. D., did not affect England until the middle of the 13th Century. Dr. Singer cautions us that the date of a given manuscript affords no clue whatever to the antiquity of a magical practice, since the written word in a savage tribe, newly converted to Christianity, was first the medium of law, religion and commerce, and, only generations later, of folk-ways. The writings of the Venerable Bede (13th Century) reveal nothing of the society around and about him, while *Beowulf* or the *Lacnunga* (13th Century) are replete with half-heathen practices. Again, magic, among all races, is essentially a syncretic or blending process, passing easily from people to people, the rational concepts of the superior class suffering a "degradation of energy" in the lower strata of society. A Greek sentence degraded into a charm, in an Anglo-Saxon manuscript, has no necessary connection with Greece, nor is the language of an early British manuscript, whether Latin or Anglo-Saxon, of any significance in itself. The leechbooks were lay products and show little evidence of learned, *i.e.*, clerical influence; the leeches in the illustrations are never represented as tonsured.

Singer divides these early writings, according to cultural influences, into eight classes, *viz.*, (1) Graeco-Latin, (2) ecclesiastical, (3) Salernitan, (4) native Teutonic, (5) Celtic (Celto-Roman, Hisperic), (6) South Italian, (7) Byzantine, and (8) pagan Roman.

1. Latinized Greek medicine, often a hodgepodge of pseudonymous compilations in barbarous Latin, was the true Dark Age of "monkish" medicine, common to South Italy, Gaul, Britain, the Rhineland and Switzerland during the 4th-11th centuries. It was practised in its entirety at the monastery of St. Gall and formed the ground-work of early English medicine, revealing here some remarkable contact with Celsus, a writer elsewhere unknown throughout the Dark and Middle Ages. This phase of British medicine was based upon mystic diagrams, showing a parallax between the four ages of man, the four seasons, the four elements, the four humors of the body, the four cardinal points, the initials of which make the word ADAM, to which the term *protoplast*, derived from the Mozarabic and other liturgies, is attached in the text. Thus the term *protoplasm*, introduced by the physiologist Purkinje in 1837, is of liturgical derivation (8th Century). The sphere of Pythagoras, a magic device from a Greek papyrus of the 3rd Century, was used for prognosis, *i.e.*, to determine the imminence of death, the advisability of extreme unction and the most favorable time for blood-letting.

2. Derived (non-native) ecclesiastical influences are in evidence through the whole corpus of Anglo-Saxon medicine in the innumerable *pater nosters* associated with magic practices.

3. Salernitan influences (pure Greek medicine streaming from Magna Graecia, Byzantium and Toledo) are easily traceable by using the great Breslau codex as a control.

4. Native Teutonic (Indo-Germanic) magic was remarkable for the doctrines of nine specific venoms, nine healing herbs, the serpent or worm as a cause of disease, the notion of the transmission of disease by blowing or by poisonous blasts of air, and of the causation of disease by elf-bolts (against which these prehistoric flint "celts" are still worn as amulets). These are the most essential features of Indo-Germanic and Anglo-Saxon medicine. In literary form, the charms and incantations cited are singularly like those in the Atharva, or those in Sumerian, Polynesian and American-Indian folk-lore, or in the Nibelungenlied; but the Babylonian and Biblical notion of a specific demon of disease, possessing the body, is essentially Oriental and never found in true Aryan medicine.

5. Celtic influences are apparent in various charms and in the magic "circle of Columcille," found also around the stone crosses of ancient Ireland. The Hisperic influence is traceable in the barbarous Latin, interlarded with a jargon of exotic words, which characterizes this mysterious body of literature.

6. The most attractive element in Anglo-Saxon medicine is the South-Italian plant-lore. The texts in these manuscripts are poor stuff, derived, without change, from Latinized originals which had been in circulation centuries before. The water-color illustrations constitute one of the most interesting phases of mediaeval medicine, for their object was utilitarian, to enable the herb-gatherers to recognize the plants. Here mediaeval art, usually fantastic, attained to a high degree of realism. The tradition of plant-painting went back to the work of the rhizotomist Cratevus (1st Century B. C.), but the standard sources were the two Vienna codices of Dioscorides (6th-7th centuries), the stereotyped tradition persisting even unto the Smyrna *Physiologus* of the 11th Century. The Anglo-Saxon MSS. show Southern rather than Viennese influences. There is servile, conventional copying in the earlier MSS., excellent free-hand drawing from living plants in a St. Albans MS. of 1120, dwindling again to mere decorative patterns in the Norman period.

7. The Byzantine element consists, in the main, of periapts or charms (often sheer gibberish) derived from sentences in the Greek liturgies, *e.g.*, the sonorous line in the liturgy of St. Chrysostom, which preceded the elevation of the host—

στῶμεν καλῶς. στῶμεν μετὰ φόβου

Let us stand seemly: let us stand in awe.

became degraded by the superstitious peasantry into a tag to stop uncontrollable hemorrhage, *viz., stomen calcos stomen meta fofu.*

8. A lengthy conjuration, in the shape of a pagan Roman spell, concludes the paper. The author makes no summaries, draws no conclusions, but these are implicit in his remarks about the syncretic nature of magic itself. W. H. R. Rivers found Polynesian massage to be a true, rational therapeutic procedure, while Melanesian massage is mere hocus pocus superimposed upon the ordinary ritual of Melanesian magic. So early mediaeval magic, preceding, as it did, the deadly dull period of Arabic domination in medicine, is comparable, as to its syncretic character, with those bad blends of alcoholic liquors which initiated, and perhaps justified, the "dry" period.

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THE ESTABLISHMENT OF MATERNITY AND INFANT WELFARE CENTERS.

Throughout the country, considerable interest is being manifested by communities in the establishment of some form of child-health supervision and maternity care. In many instances investigations have been conducted by the coöperative efforts of the Public Health Service and State boards of health and maintained at local expense. Some communities have employed public health nurses for carrying on child-welfare work; others have organized maternity and baby health centers. As the extent to which this work is organized depends not only upon the resources of communities but also on public-health education, it may be useful to call attention to abstracts, published in a recent Public Health Report, from a memorandum issued by the British Ministry of Health in regard to maternity and infant welfare centers.

The primary purpose of the infant welfare center is in the main educational; mothers are given advice and instruction in the care and management, feeding and clothing of infants and children under school age. Each mother should be interviewed individually at the time of consultation by some competent member of the teaching center. This can be followed up by collective teaching by demonstrations and health talks to groups of mothers. Women pregnant for the first time often need special classes for instruction in the most elementary hygienic principles. Other classes in sewing, home nursing, infant care, personal hygiene, cooking, and first aid can be made both helpful and interesting.

In order that the infantile welfare centers may be easily accessible to mothers, the density of the population should be estimated and the districts made as compact as possible. It is probable that a center cannot adequately take care of an area larger than one in which about four hundred births occur annually and the daily average attendance is not above thirty or forty. Every child attending the center should be seen by the medical officer at certain intervals: children under six months of age at least once a month, and older children less frequently. Home visiting by a public health nurse affiliated with the center is important in following up the work of the center and in securing regular attendance. There should be included in the medical staff one or more physicians skilled in the diagnosis of children's diseases and in the nursing staff one or more public health nurses trained in child supervision, whose duty it shall be to assist the physician, weigh and measure children, assist mothers in preparation for examination by the physicians, and visit the homes of the mothers.

Each infant welfare center should be equipped with a waiting room, which may be used for classes, a weighing room, a consultation room for the use of the physician, and adequate sanitary arrangements. As a general rule, except for minor ailments, treatment should not be given at the center but at some hospital or out-patient clinic with which special arrangements may be made. The British plan of linking several welfare centers with one center devoted solely to treatment has been found practical in that country and might be followed here. It would be well for infants under six months to be weighed every week, for those between six months and a year, once every two weeks, and for older children to be weighed at intervals varying from one to three months. The interest of mothers is increased and their attendance seems to be improved by the distribution of weighing cards on which the weights of the children are recorded regularly. Wherever it is possible to do so, milk should be sold to mothers at a cost slightly under retail price, and given free of charge to those unable to pay for it. If the funds of the center are sufficient to allow it, there may be provided a few beds so that premature infants and poorly nourished children may be cared for under scientific supervision.

Mothers seem to appreciate less the value of medical supervision during pregnancy than the care of their infants after they are born. It is the function of the maternity center, therefore, to gain the interest and confidence of the mother and advise her in regard to conditions directly associated with pregnancy and with ailments which indirectly affect her physical welfare and that of her child. The center should be made attractive as well as useful and the competent aid secured of physicians and widwives, public health nurses, and other agencies. In promoting the work of the center, the mothers themselves may often assist by helping to educate the public to an appreciation of the value of the services which the center is prepared to give. The maternity center should be provided with suitable rooms for waiting, dressing, and consultation, and a special gynecological chair, couch, or table. There should be also adequate facilities for the testing of urine and, if possible, provision for the examination of pregnant women suspected of having tuberculosis. The work of the maternity center should include consultation by a qualified physician, home visiting, educational classes in the hygiene of pregnancy, the provision of milk or food in cases where it is needed, dental treatment, arrangements with state and municipal laboratories for microscopic and serologic diagnosis in cases of suspected venereal disease, and provision whereby complicated cases may be cared for at some lying-in institution.

The value of the infant welfare and maternity centers has been demonstrated in many communities. There still exists a need for considerable enlightenment on the part of the public before the benefits of this work can be fully appreciated and adequately extended.

PUBLIC HEALTH ADMINISTRATION IN A RURAL COMMUNITY.

An excellent illustration of what can be accomplished in rural communities by efficient public health administration is the work carried on in Waterville, Maine. The Waterville Board of Health consists of three members, appointed by the mayor for terms of three years. The secretary is, *ex-officio*, executive officer of the board, and has control of communicable disease, the abatement of nuisances, and such other public health work as comes under the jurisdiction of the board. The health officer, who is also school physician, is called upon only for consultation by the secretary of the board, as for differential diagnosis of doubtful cases. For the year 1919, the total expenditures for health and sanitation, exclusive of sewer maintenance, amounted to $1,621.85, which, divided among an estimated population of 13,276, makes a per capita expenditure of 12.2 cents. That health, within reasonable limits, is purchasable has been demonstrated by the public health organizations of the larger cities; Waterville is proving that smaller communities also can attain a high degree of public health when their citizens are awakened to the possibilities of progressive public health methods.

There were reported in Waterville, for 1919, 354 births, giving a birth rate of 26.6 per one thousand of population, an exceptionally high rate for a Maine city. The reporting of births by local physicians was found to be very lax, but the withholding of fees for births not reported within five days is proving to be an effective stimulus to prompt reporting. As far as can be determined, the reporting of deaths is accurate and complete. During the year, 197 deaths were reported, giving a death rate of approximately 14.08 per thousand of population. Of these deaths, 101, or 56%, were due to preventable causes, and it is the expectation of the Board of Health that this percentage can be reduced in the future when proper preventive measures can be carried out more completely. The infant mortality rate was 81.9 per thousand. The high number of still-births, eight per one hundred normal births, indicates the need of increased educational and preventive work. Pregnancy work is one of the activities contemplated by the directors of the Waterville-Winslow Health Center and should be of great value. This health center is maintained jointly by the local chapter of the Red Cross, the State Department of Health, and the United States Public Health Service. It is in charge of the district nurse who is employed by the Red Cross and devotes part of her time to clinics and follow-up work. At present, medical service is supplied by local physicians, but it is expected that a regular medical staff will soon be provided. Thus far the clinics have been limited to venereal cases, but it is planned now to add tuberculosis, child welfare, and pregnancy work. The Health Center has been established for only about six months, so that definite results cannot be ascertained as yet; but it is arousing interest in public health work and undoubtedly will continue to enlarge its field of usefulness in the future.

There are two hospitals in Waterville; both are private institutions, the Sisters' Hospital and Gray's Hospital. The combined capacity of these hospitals is inadequate for the population, the first having thirty-eight beds, the second a normal capacity of seventeen beds and an emergency capacity of twenty-five beds. Both hospitals are open to the use of the doctors and the people in their vicinity; no house doctor or interne is maintained by either hospital.

All phases of hygiene and sanitation in the public schools are under the control and supervision of the city board of education. All pupils and teachers are given a physical examination annually by the school physician. The required examinations for eyesight and hearing are made by the teachers. There is no separate dental examination, and no school nurse is employed. Thus far, systematic physical training has not been given in the Waterville schools, but it is planned to have a full time physical instructor for work in all the grades next year. The sanitary and hygienic conditions in the newer school buildings are very satisfactory, the weakest point being ventilation. Since the introduction of the water supply from China Lake in 1905, not one case of typhoid has been traced to this source. The milk supply has been under the control of the health department since January, 1920, when a city milk inspector was appointed. He has mapped out a system of examination of samples of all milk sold in Waterville for butter fat, adulteration, and sediment, and has planned a system of inspection for dairies, creameries and delivery wagons, arranging with the State and Federal Departments of Agriculture for the tuberculin testing of all herds making milk for the Waterville market, without cost to the owners. Practically all the local milkmen have availed themselves already of this opportunity to protect their herds and their customers. The requirement that all applications for state licenses to sell milk in the city be approved by the local milk inspector greatly facilitates the control of sanitary conditions in production and distribution.

Efforts are being made continually to increase efficiency and to enlarge the activities of the Waterville public health administration. It has been recommended, for example that a health union be formed with two or three of the adjoining towns for the employment of a trained, full-time health officer; that the citizens of Waterville be urged to coöperate in making the Health Center the nucleus of public health activities; that a school nurse be employed to supplement the work of the school physician and to assist in the teaching of personal hygiene in the public schools; that the annual dental inspection of school children by a professional dentist be added to the present medical inspection; that Waterville enact a comprehensive sanitary code to facilitate and standardize public health work in the city. These recommendations indicate the progressive purpose of the public health administration of Waterville; such efforts, supported by the interest and coöperation of the citizens, would improve greatly the health conditions in similar communities.

MEDICAL NOTES.

ST. MARY'S HOSPITAL OF ROCHESTER, MINNESOTA, conducted by the Sisters of St. Francis, is, in every sense of the word, a modern hospital, well equipped in every detail. Although essentially Catholic, the hospital receives patients of every religious denomination and all non-Catholics may be visited by their clergymen at all times. St. Mary's Training School for Nurses was established in November, 1906. It offers to young women between the ages of

20 and 35 years, who are high school graduates, a course of three years' instruction in the various departments. This school is in affiliation with the largest hospital in the state of Minnesota, the City and County Hospital of St. Paul, where students are given part of their training. The school year covers a period of thirty-four weeks, offering a valuable lecture course by the members of St. Mary's Hospital staff. Classes and demonstrations from approved manuals and textbooks are conducted by the superintendent of nurses and a trained instructor. St. Mary's Hospital was founded in 1889 by the Sisters of St. Francis, Rochester. It was formally opened October 1, 1889, with a capacity of forty-five beds. During the first year of its existence over three hundred patients were admitted. The number of patients increasing each year, enlargement became necessary, and additions to the original buildings were made in 1893, 1898, and again in 1903 a large fireproof addition, built of steel, brick and tile, was constructed at an expense of $100,000. The accommodations in this building are excellent. In 1908 a new fireproof west addition, increasing the capacity of the hospital one hundred beds, was completed at a cost of $150,000. In 1912 a new modern fireproof southern extension five stories high, constructed of brick and reinforced concrete, was built, further increasing the capacity of the hospital by eighty beds; also a magnificent new nurses' home of similar construction to above, and power house and heating plant, at a cost of about $400,00. In 1910 a surgical building, at the cost of one and a half million dollars and having a capacity of about 300 beds was begun. The present hospital will be used for medical purposes, making St. Mary's a general hospital instead of being exclusively surgical, as it has been in the past. Up to the present time the hospital has received and cared for over 104,667 patients.

The Aiken Cottage Sanatorium at South Carolina.—The Aiken Cottages at Aiken, South Carolina, were incorporated in March, 1897, for the care and treatment of men in reduced financial circumstances suffering from incipient pulmonary disease. The twenty-second report of the sanatorium covers the years 1917 to 1919. During the year 1918-1919 the institution received an unusual number of patients because of the great number of cases discovered through draft examinations. In spite of the increased cost of living, the charge to patients has never risen above five dollars a week, the same amount that was asked when the sanatorium was organized in 1897. No appeal for funds has been made for several years.

During the year of 1917-1918, eighteen patients were admitted, of whom seven cases had improved definitely at the time of discharge and two were apparently arrested. In 1918-1919 twenty-one patients were admitted; upon discharge, one case was apparently arrested, one quiescent, twelve improved, and six unimproved. The report contains several interesting letters from patients who were benefited by treatment at the Aiken Cottage Sanatorium.

Decoration of American Woman Physician.—The Order of King George has been conferred by King Alexander of Greece on Dr. Blanche Norton of Eldon, Iowa, a physician of the American Committee for Relief in the Near East. While treating the trachomatous eyes of Greek orphans at Kerrassunde, Anatolia, Dr. Norton contracted the disease herself. She is the first woman to receive the order.

Methods of Destroying Rats.—The United States Public Health Service has warned the country of the danger of bubonic plague if serious efforts are not made to eliminate rats. The plague has appeared in a number of Mexican and American gulf ports and at points in the Mediterranean. The Health Service Bulletin has stated that rat destruction can be accomplished by individual effort to a limited degree, but to be successful in a large city there must be rat-proofing of buildings.

"Rats can be destroyed by trapping, by poisoning, and by using natural enemies, such as certain breeds of cats and dogs. To insure the success of these measures it is necessary to curtail the rat food supply by properly disposing of garbage and table refuse, and by preventing rats from gaining access to such foods as are contained in pantries, groceries, markets, stables and the like.

"The trap should be placed wherever rats have been accustomed to come for feeding purposes and should be more or less concealed, the snap trap by scattering dust, cornmeal or flour on or about them, and the cage trap by pieces of sacking, straw or rubbish, leaving only the opening free.

"The destruction of rats by poison has always been more or less in favor. A preparation of arsenious acid or phosphorous, 10%, and suitable base, as cheese, meat, or glucose, are the most popular poisons. Poisons undoubtedly have a certain efficiency in ridding a place of rats, but whether by causing their migration or their actual destruction is somewhat difficult of determination.

"In rat-proofing any building, the following parts have to be considered: ground area, walls, ceiling, garret, roof, bed spaces in general, ventilators, abandoned sewers, doors, windows, outside piping, water and sewerage pipes, down spouts, wiring and air or light shafts. By the omission of some small detail an otherwise rat-proof structure may become badly rat-infested."

It has been urged that city anti-rat ordinances and state anti-rat laws be demanded.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending August 7, 1920, the number of deaths reported was 152 against 167 last year, with a rate of 10.60 against 10.94 last year. There were 30 deaths under one year of age against 38 last year.

The number of cases of principal reportable diseases were: Diphtheria, 27; scarlet fever, 25; measles, 14; whooping cough, 48; typhoid fever, 4; tuberculosis 32.

Included in the above were the following cases of non-residents: Diphtheria, 6; scarlet fever, 6; measles, 1; whooping cough, 3; typhoid fever, 1; tuberculosis, 2.

Total deaths from these diseases were: Diphtheria, 1; scarlet fever, 1; whooping cough, 4; tuberculosis, 16.

Included in the above were the following non-residents: Tuberculosis, 2.

Infantile paralysis, 5 cases and 2 deaths.

Demonstration of Plague Control.—Dr. William C. Woodward, Health Commissioner of Boston, Dr. Philip Castleman of the Health Department, and Mr. Herbert A. Wilson, Building Commissioner, left Boston to attend a demonstration given at Galveston, Texas, on August 3 and 4, of the methods of plague control and the application of repressive measures against disease-breeding rats. The demonstration was arranged by the Federal Public Health Service, and was attended by health and building representatives from all over the country.

Bequests to Medical Institutions.—The will of the late Miss Henrietta M. Pierce of Dorchester has provided for a gift of five thousand dollars each to the Boston Home for Incurables and the Children's Hospital.

Return of Lepers to Penikese Island.—It has been decided that the two lepers whose cure was expected through the use of chaulmoogra oil must return to the leper colony on Penikese Island for further treatment. A special medical board which was appointed to study their cases has reported that although their condition is greatly improved, bacteriological tests show that some of the leprosy bacilli still remain in their blood.

Resignation of Dr. Albert S. Hyman.—Dr. Albert S. Hyman, resident physician at the Long Island Hospital, has resigned from that institution, his resignation to take effect August 1. Dr. Hyman is to become superintendent of the Mt Sinai Hospital in Philadelphia. Dr. Albert B. Murphy, who has been an assistant resident physician at the hospital, has been appointed Dr. Hyman's successor.

Work of Boston Physician in Ecuador.—The work of a Boston physician, Dr. Michael Connor, has been praised by United States Consul General Frederic W. Goding of Guayaquil, Ecuador. Dr. Connor, with the support of the Rockefeller Institute, succeeded in eradicating yellow fever from Ecuador after working diligently at the task for 18 years. Yellow fever had been a scourge in Guayaquil and elsewhere in Ecuador for many years, and in 1890 this Institute sent the Japanese bacteriologist, Dr. Nogouchi, to Guayaquil, where he accomplished a considerable amount of work. An effort was then made to have a commission sent to undertake to drive out the disease, but the plan was given up because the consent of the people could not be gained. In 1900, however, Dr. Connor was sent from Boston and the Institute placed at his disposal the sum of one hundred thousand dollars, to be used at his discretion. Dr. Connor went alone, although he was permitted to take with him as many assistants as he desired. For 18 years Dr. Connor studied the disease and made steady progress against it by improving the sanitary conditions. On March 23, 1918, the last death from yellow fever occurred, and it is expected that the disease will not appear again unless it is brought in from some other country. Inoculation was employed as one of the ways of checking the disease.

Publication of the Judge Baker Foundation.—The Judge Baker Foundation has issued recently a volume in memory of Harvey Humphrey Baker, the first Justice of the Boston Juvenile Court. This is the first of a contemplated series of publications to be issued by the Foundation. The subsequent ones will probably be scientific studies of Dr. William Healy and Dr. Augusta F. Bronner, Directors of the Foundation, and by other members of the staff.

Bequests to Medical Institutions.—The following bequests are included in the will of the late Charles L. Davis of Roxbury: $5,000 each to the Boston Floating Hospital, the Massachusetts Homeopathic Hospital, and the Boston Dispensary; $1,000 each to the Massachusetts Women's Hospital, Perkins Institute and the Massachusetts School for the Blind, Infants' Hospital, Free Hospital for Women of Brookline, Convalescent Home of the Children's Hospital, Talitha Cumi Maternity Home and Hospital, Boston Nursery for Blind Babies, Instructive Nursing Association, and the Cullis Consumptives' Home in Dorchester

NEW ENGLAND NOTES.

Appeal for Nurses.—In response to an appeal issued by the surgeon-general of the Public Health Department for the American Red Cross to provide four hundred nurses during the next three months, a campaign for recruiting nurses has been begun by the New England Division of the Red Cross. It has been stated that ultimately four thousand nurses will be needed in the public health service hospitals to care for disabled soldiers and sailors. A letter has been sent by the director of nursing in the New England Division to all State and local nursing committees in the New England States, excepting Connecticut, requesting assistance.

War Relief Funds.—The following contributions have been announced by the New England branches of war relief funds:

American Memorial Hospital Fund	$360,319.44
Italian Fund	330,865.07

Bequest to the Eastern Maine General Hospital.—The Eastern Maine General Hospital at Bangor, Maine, has received the sum of ten thousand dollars by the will of the late Dr. Thomas Opham Coe.

Correspondence.

MATERNITY AID.

Somerville, Mass., Aug. 7, 1920.

Mr. Editor:

Without entering into a discussion as to whether "maternity aid" in Massachusetts will be beneficial or not, I desire to enter my protest to some statements contained in the article in your last issue entitled "Maternity Aid," and especially I wish to take exception to the sentence which says, "The condition of obstetrics in this state is intolerable."

The practice of obstetrics has been in the hands of the medical profession in Massachusetts—at least that has been the professional opinion and, to a great extent, that has been the lay opinion. There are some communities in which the midwife practices. To what extent it prevails I am not competent to say. In the minds of most medical men, the above quotation is paramount to a serious charge against the medical profession. It surely conveys the idea that a willing and not uninterested public has trusted the profession and the profession has failed ingloriously in protecting human life. Such a sweeping indictment against the whole medical profession has never before appeared in print in any kind of a newspaper in Massachusetts. As a humble member of the profession I protest vehemently against charges as serious as these which go out unqualified to the community.

Therefore, it behooves those of the profession who are in any way interested in the preservation of human life to ask for an honest, impartial, and scientific inquiry into the condition of obstetrics practice in Massachusetts, to the end that, if the fault lies with the profession, it should be corrected. If it lies without the profession, the profession should use its greatest endeavors to bring about a change. It is not within the scope of this communication to analyze the cause of each of the 804 deaths that occurred in Massachusetts in 1918 that are tabulated in the report of the vital statistics of the state of Massachusetts under the heading *Puerperal Stage.* It is not fair to take, as the Journal did, the figures 804 without some explanation as to what the 804 deaths meant. For convenience in tabulation, the state of Massachusetts has made the following classification:

PUERPERAL STAGE.

1. Accidents of pregnancy.
2. Puerperal hemorrhage.
3. Other accidents of labor.
4. Puerperal septicemia.
5. Puerperal albuminuria and convulsions.
6. Puerperal phlegmasia alba dolens, embolus, sudden death.
7. Following childbirth (not otherwise defined).
8. Puerperal diseases of the breast.

Quite an array, I am sure! All the deaths in these many subdivisions, by some people, at least, are charged up to poor obstetric practice and inferentially the profession must pay the penalty, if not for its sins of commission, in any event for its sins of omission At first glance, 804 deaths seems startling, but a fair analysis of these figures, especially for the year 1918, will put a different face upon the matter, for it is not possible to prevent all deaths that occur in the puerperal stage. It might be interesting, Mr. Editor, to analyze the number of deaths from puerperal septicemia in Massachusetts

In 1918, of the 354 cities and towns in Massachusetts, puerperal septicemia occurred in 47 In other words, about 13% of the cities and towns in Massachusetts had from one to 45 deaths from puerperal fever. Three hundred and seven cities and towns had none. That surely is not an intolerable condition from a medical standpoint. It is interesting to note that the largest number of cases of puerperal sepsis occurred in large cities,—in cities where there are good hospital facilities, visiting nurses, Public Health nurses, opportunities for pre-natal and post-natal care; in cities where the people and the profession have been especially generous in money, time, and advice.

In 1917 of four cities of Massachusetts of which the population is about 100,000, each had six deaths from puerperal fever, and in four cities of which the population is between 50,000 and 100,000, two cities had three deaths from puerperal fever, one city had four deaths, and one city had two deaths.

In 1917 the number of deaths from puerperal septicemia was 194. In 1918 the number of deaths from puerperal septicemia was 159.

In 1917 in one city of nearly 200,000 people there were 24 deaths from puerperal sepsis. In 1918, in the same city, there were nine deaths. In another city of nearly 100,000 people, six deaths occurred in 1917 and three deaths in 1918.

In 1917 Gloucester did not report any deaths from puerperal sepsis, and in 1918 Salem did not report any deaths from puerperal sepsis.

One city of over 25,000 inhabitants, which has the reputation of being the home of some of the wealthiest citizens of the commonwealth and whose practitioners are considered among the most able and progressive of the profession, had four deaths in 1819 from puerperal sepsis. A large industrial city of which the population in 1915 was over 60,000, reports one death.

In 1915 Norfolk and Hampshire Counties did not report any deaths from puerperal sepsis.

Whether or no deaths from puerperal sepsis after criminal abortions or after abortions that are not criminal are classified under the puerperal stage I have not been able to ascertain, nor do I find such deaths classified separately in the report of vital statistics.

But I do find under the heading of "Accidents of Pregnancy" in 1918, 209 deaths, and under the heading of "Other Accidents of Labor" in 1918, 194 deaths. What "Accidents of Pregnancy" and "Other Accidents of Labor" may mean, I do not know, but they were responsible for 403 deaths. I also find that in the influenza months of September, October, November, and December of 1918, the deaths in the puerperal stage were twice and sometimes three times as many as they were for a corresponding period four or five years before 1918.

This letter is not written for the purpose of controversy. It is not an argument pro or con in the question of maternity aid. It is a protest against sweeping assertions in regard to a point in controversy and further it is a plea for justice and sanity in reading in their proper light and perspective statistics in regard to sickness and death.

Most respectfully,
Charles E. Mongan, M.D.

* * *

MATERNITY AID.

Somerville, Mass., Aug. 7, 1920.

Mr. Editor:

I have words of comfort for the author of the "Maternity Aid" editorial of August 5th. To begin—I am sure the statistics of the year 1919 will show a most gratifying return to a low average of "puerperal deaths," because the conditions which were responsible for the terrible puerperal mortality of 1918 no longer exist.

Beginning with the latter part of 1917, general practitioners and nurses went into the Federal Service in increasing numbers until, by September, 1918, a very large percentage of those physically able were in their country's service. Thus their obstetrical work, in which they are so highly proficient, was left largely to the care of obstetricians and midwives.

Moreover, very many general or family practitioners were serving on draft and advisory boards, and in various other lines of war activities.

The calls for obstetricians or midwives in the army or navy, or for service on draft or advisory boards were not many.

Then, early in September, 1918, came the pestilence, and the general practitioner was in the first line of the influenza battle. Obstetricians and midwives are not expected to know much about influenza or influenza-pneumonia.

Of the 804 puerperal deaths in 1918, 444 occurred in the last four months of that year: September, 102; October, 185; November 59; December, 98.

In the first 8 months of 1918 the mortality was 360, giving an average of 40 a month. If this ratio had been kept up, the puerperal mortality for the year would have been only 480. Had the mortality of the last four months been present during the first eight months, the mortality would have been 1332.

I have also taken the corresponding figures for the four years 1910 to 1913, inclusive, and for the three years 1915 to 1917, inclusive. In the time at my disposal I could not get the figures for 1914.

In the years 1910 to 1913, the average yearly mortality was 452.5, the average for the last four months of those years was 124.75. Of the three years 1915, 1916, and 1917, the average mortality was 534.33 and for the last four months, 156.

In every one of these seven years, the mortality of the last three months was less than a third of the total mortality.

Most respectfully,
Frank E. Bateman, M.D.,
Physician is general practice.

* * *

LABORATORY TRAINING FOR NURSES.

Owing to the apparently increasing demand for graduate nurses who are also proficient in laboratory technique, a course of instruction has been arranged by the Massachusetts Homeopathic Hospital. The course consists of continuous work for one year in the laboratories of Boston University and of the adjoining hospital. It includes didactic and practical instruction in bacteriology, hematology, urinalysis, and serology, together with actual performance of large numbers of the various tests and examinations that come within the scope of a general pathological laboratory. Each student will be expected to devote every morning, Sundays excepted, and at least four afternoons a week to the work.

Arrangements have been made to include instruction in and practical application of the various forms of anesthesia for a period of three months. No fee for the course will be made, each student receiving board, room and laundry during the period of her stay. In certain instances an additional period of three months can be arranged for instruction in x-ray technique. All applications should be addressed to

Dr. H. M. Pollock, *Supt.*,
Massachusetts Homeopathic Hospital,
Boston, Mass.

* * *

RECENT DEATH.

Dr. Joseph D. Wholley died recently at his home in Brighton at the age of 28 years. Dr. Wholley was born in Chelsea. He was a graduate of the Harvard Dental School in the class of 1919. He is survived by his mother, a brother and three sisters.

The Boston Medical and Surgical Journal

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The Massachusetts Medical Society.

MEETING OF THE SECTION OF SURGERY, JUNE 8, 1920.

MULTIPLE RESECTIONS OF THE SMALL INTESTINE.

REPORT OF A CASE OF BULLET WOUND OF THE ABDOMEN WITH MULTIPLE PERFORATIONS OF THE BOWEL AND MESENTERY, TREATED BY PRIMARY RESECTION OF THREE SEGMENTS WITH END-TO-END ANASTOMOSES BY MEANS OF MURPHY BUTTONS, SECONDARY DRAINAGE OF JEJUNUM, FINAL CLOSURE OF FISTULA, AND COMPLETE RECOVERY. CONSIDERATION OF SURGICAL PRINCIPLES INVOLVED.

BY ERNEST L. HUNT, M.D., F.A.C.S., WORCESTER, MASS.

[From the Surgical Service, Worcester City Hospital.]

IN presenting this paper to a gathering in which I recognize many surgeons of greater experience than mine, I am not unmindful of the danger that I may on the one hand overemphasize principles already well established or, on the other, enthuse unduly over a result perhaps more due to good fortune than good surgery. Were it not that an extensive, though by no means exhaustive, search of the literature since the beginning of the war, has failed to uncover an exact parallel, I should hardly have the temerity to ask your attention to a single case and its lessons as I interpret them.

In the field of penetrating wounds of the abdomen war experience brought us back to the point of view of civilian practice, namely, that with anything like adequate facilities, and in the absence of certain well understood contraindications, recent penetrating wounds probably involving hollow viscera should be explored and the damage repaired with the least possible delay. It is not my purpose, however, to arrest your attention on this point or to discuss the degree to which it is held or its legitimacy; but rather to consider the question of what may be done in the presence of an intestine so greatly damaged by the passage of a missile as to render simple suture impractical. The high mortality experienced by all workers in this field justifies the sober consideration of any means which may in the least degree contribute to more successful handling of these emergencies. As bearing on this point let me quote from Tuffier,[1] who said in 1916, "As regards laparotomy for a wound of the small intestine with suture resulting in cure, I do not think (from inquiries I have made at the front) that there exist at the present time twenty such cases in the French Army."

Reviewing the text-books one hardly discovers reference to multiple resections as a possi bility. Generally one is left to assume that when a resection is to be done a single segment must take in the whole damaged area although Moynihan[2] in his "Abdominal Surgery" says, "In rare occasions a double or even a triple resection may be necessary." Similarly, a perusal of the periodical literature, with rare exceptions, leaves one with the definite feeling that a single resection is all that is to be considered. Writers dwell upon the length of segments removed but it is rarely we find a report of double resections. Only twice did I find mention of the removal of more than two segments and they were not successful. In a review of 1200 cases of gunshot wounds of the abdomen, Cuthbert Wallace[3] says, "Double resections in this series have always been fatal, though I know of one successful case." I have been able to find in the literature, so far as I have been able to review it, but twenty cases of resection of more than one segment, some of which were reported singly while others were found in group reports of cases of this general class. It is hardly reasonable to suppose that these constitute more than a fraction of the number which exist but which have not yet been published or reports of which I have not come across.

It is, however, quite plain that the majority of surgeons regard the amount of bowel sacri-

TABLE I.

RECORDED CASES OF RESECTION OF INTESTINE WHERE MORE THAN ONE SEGMENT HAS BEEN REMOVED.

AUTHOR	RESECTIONS	SEGMENTS	ANASTOMOSIS	RESULTS
Codman[4]	1 small int. 1 colon		Lateral	Recovery
Webb and Milligan	2 ileum	9 in. 2½ ft.	Lateral	Recovery
Okinczye	4		End-to-end	Death
	2 small int.		1 end-to-end 1 lateral	Death
	1 small int. 1 colon		End-to-end End-to-end	Death
	1 small int. 1 colon		End-to-end End-to-end	Death
Wallace, Cuthbert[3]	2*			Recovery
Paschini[17]	2 small int.	1.5 meters		Recovery
Taylor, G.[5]	1 jejunun 1 ileum	4 ft. 2½ ft.		Recovery
	1 tr. colon 1 jejunum	3 ft.	End-to-end	Recovery
	1 ileum 1 sigmoid	18 in.	End-to-end	Recovery
Darling, S.[15]	2 cases 2 small int.			Death
Don, A.[16]	1 small int. 1 small int.	1 ft. 3 ft.	End-to-end End-to-end	Death
Meyer and Taylor[14]	1 ileum 1 jejunum	4 in. 18 in.	End-to-end End-to-end	Death
	1 ileum 1 jejunum	4 in. 9 in.	End-to-end Lateral	Evac. 16th day
	1 ileum 1 jejunum	4 in. 9 in.	End-to-end End-to-end	Death
Hughes and Rees[13]	3 small int.			Death
	Ileum Colon			Death
	2 small int.†			Death
Hunt, E. L.	1 jejunum 1 ileum 1 ileum	21 in. 13 in. ½ in.	Murphy button Murphy button Murphy button	Recovery

Total: 21 cases: 12 deaths: 9 recoveries.

Three cases with more than two segments resected, one recovery (author's case.)

* Mentions case not his own

† Also wounds of leg.

ficed as of less moment than the dangers and loss of time incident to multiple resections and the necessary repair work. Owen Richards[11] insists upon the necessity of making the resection sufficiently ample to exclude the possibility of suturing devitalized gut, and says " . . . . it is doubtful if the difference in shock is very great; and whereas the risk of an insufficient resection is death, that of an excessive resection is more likely to be indigestion." He quotes a successful resection of seven and a half feet and states that the large ones recover as well as the less extensive.

It is here the experience I wish to relate is not in complete accord with that of the majority, and while I do not wish to be understood as assailing the wise principle of a single resection where a reasonable amount only need be sacrificed, I think one may say that it does not bear the force of an absolute rule of procedure.

CASE.

F. L., Italian, male, aged 27, barber. Injury—Shot at close range with a large calibre automatic about 9 o'clock P.M., January 18, 1920. Brought to accident room at Worcester City Hospital where he was noted as conscious and rational but suffering great pain. The wound of entrance was situated in the lower left quadrant of the abdomen, was nearly circular in shape, 1 cm. in diameter, and bleeding but slightly. The abdomen was moderately distended, tender and spastic, with dullness in both flanks; pulse 110; no vomiting. Any attempt to move him caused great pain. Morphine was injected and then the bullets were located by x-ray lying outside the abdominal cavity in the neighborhood of the right hip-joint, both apparently having entered through the same wound.

Working Diagnosis. Bullet wound of abdomen, internal hemorrhage with injury to hollow viscera, moderate shock.

Operation, at 11 P.M., ether anesthesia, Dr. Hunt, assisted by Dr. Fipphen. Low median laparotomy found much free blood in peritoneal cavity and active bleeding from torn mesenteric vessels. Systematic exploration found eleven perforations of the small bowel in two groups, one in lower jejunum and the other in the ileum, with two considerable rents in the mesentery of these portions. Eighteen inches above the ileocecal junction was another wound which practically severed the gut. Considerable spilling of intestinal contents had occurred. Bleeding points were secured, one isolated perforation was sutured, two sections of intestine 21 inches and 13 inches in length respectively were resected and end-to-end anastomoses accomplished by Murphy buttons, closing the gaps in the mesentery by double rows of catgut. At the point where the bowel was nearly severed another short resection and similar anastomosis was done. The coils were washed liberally with hot saline solution and, the joints appearing competent, were returned to abdomen, two cigarette drains passed to the pelvis and the wound closed layer by layer. The wound of entrance was excised, partly sutured and a wick inserted. No attempt was made to get the bullets. Post-operative condition was good, pulse 108.

Prophylaxis—1500 units antitetanus serum was injected shortly after reaching ward.

PROGRESS.

The first two days developed no markedly unfavorable symptoms but the third found him suffering with gas pains which increased rapidly during the day with distention and regurgitant vomiting becoming fecal in the afternoon, associated with sweating, prostration, and rise of pulse to 120. Post-operative ileus was diagnosed and interference decided upon.

Second Operation. 5.50 P.M., January 21. Gas-oxygen anesthesia. Wound reopened, coils found distended and agglutinated by fibrinous exudate associated with considerable bloody fluid. The several points of anastomosis were inspected and found competent, the segments of intestine between and above them were also distended and gas passed freely through the buttons when the bowels were compressed, but there was comparatively little filling of the ileum beyond the lowermost anastomosis though it was not collapsed. The loop of jejunum immediately above the first joint was clamped, a Mixter tube inserted through a small incision and retained by double purse-string sutures. Drains were inserted in the lower angle of the wound which was rapidly closed by mass sutures, the restoration of the bowel to the cavity being facilitated by the escape of gas and fluid contents through the Mixter tube. Post-operative condition fair.

PROGRESS.

January 22—Continued vomiting, tube not functioning. Lavage with warm saline solution through the tube brought away much fecal material.

January 23—During the night 32 ounces drained through tube and escape of gas was frequent, distention was greatly relieved, general condition much improved with cessation of vomiting.

January 23—Distention subsiding. There is leakage of yellowish fluid about tube and redness of stitch holes below. Culture taken at second operation reported "profuse growth of streptococci."

For the next four weeks the fistula drained freely into the dressings with digestion of the skin and separating of the skin edges along most of the incision. Patient became very discouraged, suffering much from the skin irritation and wasting from loss of food through fistula. In the meantime, however, passage of gas and feces by rectum became established, retraction of the belly succeeded the distention.

Third Operation. February 20; gas-oxygen. Upper three inches of old wound reopened, edges of gut identified and dissected free from overlying tissues for about an inch in all directions. Edges of gut refreshed and closed by three rows of fine silk very carefully applied and covered in with an omental flap. Skin drawn together by three mattress sutures of silkworm gut. Post-operative condition as good as before.

PROGRESS.

Patient brightened up immediately he began to retain his nourishment, appetite developed rapidly. March 2—forty-third day—he passed the three Murphy buttons. The skin rapidly cleared up, the wound healed and he was discharged well March 7, the forty-eighth day.

The illustrations show the location of the bullets and to some extent the progress of the Murphy buttons.

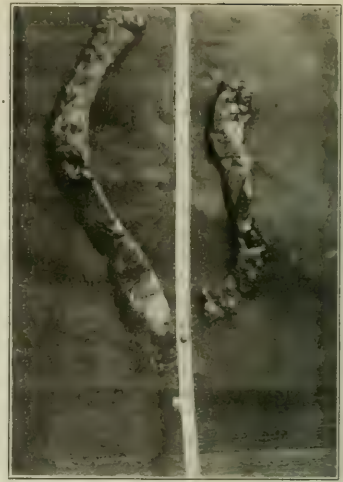

Fig. 1 shows resected portions, somewhat shrunken from the preserving fluid.

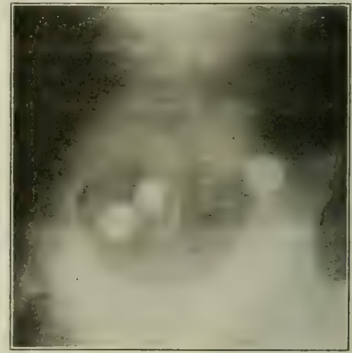

Fig. 2 shows x-ray taken on twenty-fifth day. Murphy buttons dispersed.

While the possibility of recovery after very long resections is well established it is also well established and must be constantly remembered by operators that the loss of an undue length of small intestine is productive of "indigestion" not merely, but actual malnutrition, from impaired assimilation of fats and proteids—in degree depending upon the amount of gut sacrificed. This aspect of the problem does not make as pleasant reading as does the story of a brilliant operation, but some at least find their way into the literature. Dr. Codman[4] with his customary frankness has recently told the later history of one of his cases in which the successful resection of eight feet was followed by gastric tetany and wasting. We cannot often safely subordinate the physiological needs of the economy to the mechanical possibilities, and the old rule to save as much as possible of an injured member must be the guide where experience and the particular rules of surgery do not cover the situation. Here I find comfort in the words of Webb and Milligan,[5] who, though advocating a single resection qualify their advice thus: "Should there be over two feet in between the resections then it would be better to perform the two; under two feet we think it better to remove the intervening foot or foot and one-half of healthy bowel." This at least affords a working guide and is in practical agreement with Senn's rule limiting the amount of small intestine safely removable to one-third its length.

Fig. 3.—X-ray taken on forty-third day. Buttons probably in rectum. They were passed later in the day. Bullets near right hip.

Next to the immediate dangers of hemorrhage and shock comes that from toxic absorption which ensues when there is obstructive or paralytic distention of the upper bowel. The effect of trauma to the intestine is paralysis, with resulting distention of the portion proximal to the injury even though there be no actual mechanical obstruction—a condition to which Owen Richards[9] applies the term "functional block." To this paralytic condition the operative trauma and the relative constriction incident to the anastomoses contribute. The advent of peritonitis, even though mild, completes the blockade and the fate of the case in which one is unable to quickly and successfully combat this paralysis is sealed. Fortunately the recognition and proof by many workers[18, 20, 21, 22, 23, 28, 31] of the particular toxicity of the contents of the duodenum and upper jejunum under these circumstances and its relation to the fatal collapse which so rapidly supervenes, has indicated the means of relief. This lies in the performance of a timely proximal enterostomy with drainage of the upper bowel.

The life saving value of this procedure has been demonstrated and proclaimed by so many whose words carry great weight with our profession that argument of mine is superfluous. For example, Charles Mayo[10] says that it is as much an operation of necessity as is tracheotomy. I therefore would content myself with urging, not its justification as a last resort, but its employment in season to prevent the arrival of the patient at the extremity where the margin of vitality in the gut is so reduced that peristalsis may not be restored. It will be observed from the protocol that immediate relief was afforded my patient when the enterostomy, done about the 66th hour, began to functionate. There can be little doubt that the outpouring of poisonous retained contents of the duodenum and jejunum with subsidence of the distention, saved him from immediate death.

It is my contention that if this expedient can be of so much value when undertaken as a forlorn hope for the relief of a condition already established it should be of much greater service if applied in the beginning. Relieving distention and stasis before the stage of toxic absorption develops seems to me as rational as putting money in the bank, and furthermore, by putting the distal, wounded portion of the bowel at rest, thus relieving the anastomoses of tension, both the local healing process and the general defensive reaction of the peritoneum will be favored. It is not necessary to defer the closure of the fistula four weeks. If one can take the time to put in a provisional purse string of silk, it can be drawn up after the tube comes out, or the special techniques of Long or Coffey may be followed. In this contention I find that I am not alone in principle; Major Gordon Taylor[12] successfully practised primary or prophylactic cecostomy in his cases of resection for severe wounds of the colon and rectum. William Mayo and others utilize appendecostomy and like expedients for gas rents in their colon resections. Of course it is more difficult to make a secure anastomosis in the large than in the small bowel and the expedient of a fistula is less troublesome to skin and nutrition when from the colon but if either will save a case from disaster it surely is a small price to pay.

In conclusion I would summarize the lessons I derive from this case as follows:

1. In cases of severe traumatism to the in-

testine multiple resections are possible and to be utilized where a single resection would deprive the patient of an undue amount of bowel.

2. In such cases where the paralytic ileus has begun or its supervention is to be clearly anticipated, primary enterostomy proximal to the traumatized area, is theoretically indicated.

3. In cases of post-operative ileus enterostomy should not be too long deferred. Its proven value entitles the patient to its benefits without waste of time on less efficient measures which indeed it supplements rather than supersedes.

REFERENCES.

[1] Tuffier: Contemporary French Surgery. Brit. Jour. Surg., 1915-1916, p. 111.

[2] Moynihan: Abdominal Surgery, 1905.

[3] Wallace, Cuthbert: A Study of Twelve Hundred Cases of Gunshot Wounds of the Abdomen. Brit. Jour. Surg., 1916-1917, iv, p. 679.

[4] Cadman, E.: Intestinal Obstruction. BOSTON MEDICAL AND SURGICAL JOURNAL, April 22 and 29, 1920, p. 454.

[5] Webb and Milligan: Notes on Thirty-Two Cases of Penetrating Wounds of the Abdomen Treated at a Casualty Clearing Station in France. Brit. Jour. Surg., 1915-1916, iii, p. 645.

[6] Okinczyc, M. J., and Dandu-Clavand, M. H.: Quarante operations pour plaies penetrantes de l'abdomen. Bull. et Mém. Soc. de Chir. et Mém. Soc. de Chir. de Par., 44 (1), 1918, p. 300.

[7] Paschini, P.: Double Resection of Intestine. Policlinico, Roma, Feb. 2, 1919, abs. Jour. A. M. A.

[8] Taylor, G.: Recovery in Gunshot Wounds of the Abdomen Produced by Large Fragments of Metal. Brit. Jour. Surg., July, 1919, Vol. xxv, p. 142.

[9] Richards, Owen: Brit. Med. Jour., Aug. 7, 1915.

[10] Mayo, Charles H.: Enterostomy and the Use of the Omentum in the Prevention and Healing of Fistulae. Ann. of Surg., November, 1917, p. 568.

[11] Long, J. W.: Enterostomy, A Perfected Technic. Jour. A. M. A., 1917, Vol. lxviii, p. 883.

[12] Taylor, G.: Prophylactic or Temporary Cecostomy in Resection of the Distal Portion of the Colon for Non-Obstructive Conditions. Jour. R. A. M. C., January, 1920, Vol. xxxiv, No. 1, p. 60.

[13] Hughes and Rees: Lancet, April 28, 1917.

[14] Meyer and Taylor: Penetrating Wounds of Abdomen. Lancet, Jan. 1, 1906, p. 8.

[15] Darling, S.: Brit. Jour. Surg., 1916-17, Vol. iv, p. 772.

[16] Don, A.: Brit. Med. Jour., Mar. 10, 1917, p. 330

[17] Fraser, J. and Drummond, H.: Three Hundred Perforating Wounds of the Abdomen. Brit. Med. Jour., March 10, 1917, p. 321.

[18] Palmer, W. W.: Absorption Studies after Resection of more than half the Small Intestine. Am. Jour. Med. Sci., December, 1914.

[19] Handley, S.: Br. Jour. Surg., October, 1915.

[20] Whipple: Intestinal Obstruction a Proteose Intoxication. Jour. A. M. A., Aug. 6, 1915.

[21] Stone, Bernheim: Jour. Exp. Med., 1913, p. 307.

[22] Draper, J. W.: Jour. A. M. A., 1912, lix, 1614.

[23] Leach and Draper: Am. Jour. Med. Sci., 1914, p. [illegible]

[24] Murphy and Brooks: Arch. of Int. Med., 1915, p. [illegible]

[25] Lord, F.: The Value of Enterostomy in Selected Cases of Peritonitis. Jour. A. M. A., July, 190[illegible]

[26] Greig Smith: Surgery, Vol. ii, 6th edition.

[27] Dragstedt and others: Study of Factors Involved in Production and Absorption of Toxic Materials from Intestine. Jour. Exp. Med., Vol. xxv, p. 109.

[28] Van der Berg: Preferred Technique in Intestinal Drainage. Jour. Mich. Med. Soc., 1907.

DISCUSSION.

Dr. Homer Gage, Worcester: Dr. Hunt has presented an interesting case in an interesting way and is to be congratulated on his success.

Gunshot wounds of the abdomen naturally divide themselves into those in which the intestines are injured and those in which the intestines escape injury.

In the latter case the problem is simply as to whether operation is necessary at all, and its consideration does not come within the province of this discussion.

When the intestine has been injured but the mesenteric border is not involved, simple suture is usually sufficient, and in case of multiple injuries is the operation of choice, even at the risk of some narrowing. It lessens the danger from shock, tides the patient over his immediate danger, and if narrowing occurs the trouble may be remedied later with relatively greater chance of success.

If the mesenteric border has been involved, resection becomes necessary, and if the mesentery is involved in several places multiple resections must be done or a simple resection including all damage becomes necessary.

It is obvious that if too long a loop is involved its removal is attended with after effects that cannot be remedied. Perhaps Dr. Hunt's rule, of not including over two feet in a single resection, is as good as any. Where the perforations of the mesenteric border are far apart, multiple resections must be the operation of choice.

I was interested in Dr. Hunt's secondary jejunostomy. At a recent meeting of the American Surgical Association, Dr. J. E. Summers, in an article on "Acute Intestinal Obstruction," advocated jejunostomy as a first-stage operation in those late cases which so often present themselves at our hospitals with regurgitant vomiting, and so much distention that physical diagnosis is quite impossible.

We are all familiar with these desperate cases and the high mortality which is often increased by anesthesia and prolonged search for the seat of the obstruction.

Dr. Summers proposes that instead of hunting through the abdomen for the cause we should make a small high median incision,—identify the jejunum and put a tube in it. Whenever these cases present a condition of reversed peristalsis, and they often do, an immediately effective drainage is secured, and much more effective than drainage at the other end of the stream would be.

Dr. Summers reports excellent results from his procedure and it is interesting to find confirmation of its efficiency in the case of Dr. Hunt.

Dr. F. H. Washburn, Holden: I should like to say just a word preliminary to my feeble and brief attempt to discuss this paper. You have listened to an essay by a gentleman who bears the name of director of surgical services in one of the largest hospitals of the State. You have had the benefit of the discussion of the paper by a gentleman who is conceded to be the leader of the surgical profession in his part of the state, a man of state-wide and nation-wide reputation: consequently how can I, a mere country town surgeon but feel somewhat in the position of one of two certain skunks.

Two skunks were wallowing along the country roadside, when there swept past a huge motor car, leaving in its wake a malodorous vapor, the product of the combustion of gasoline and oil. One of the skunks turned to his companion with a knowing wink. The latter looked up and said, "Oh, what's the use!"

There has not been anything in my career which entitles me to say much on multiple resections. My superficial search of the literature on the subject has not revealed much, and I shall have to discuss the thing from the general standpoint of anastomoses.

Of course, the conventional thing is to congratulate Dr. Hunt on the excellent result of his very serious and interesting case, and I am sure I am glad to do that, for that was some operation. It is interesting to observe what a tremendous amount of operating can be done on the intestines and still have the patient get well. Eighty per cent. of the small intestine may be removed, and the patient recover. We know that something like 18 feet of the small intestine has been removed at one sitting, and the patient has gotten well, and possibly he may have had a Murphy button to take home with him as a memento. It may be getting off the subject to speak of the large intestine, but the large intestines have been removed *in toto* a great many times for intestinal stasis. Of course it took splendid technique and great skill, and it seems to me the death rate must have been rather high.

The time was when a man went into a surgeon's office and complained of a few symptoms, among others constipation. If a diagnosis of intestinal stasis was not made he was fortunate, and if he got away with anything more than an esophagus and the lower end of the sigmoid he was fortunate indeed. Now the pendulum is swinging the other way, and I should like to push it.

One point emphasized by this operation, besides those which have been brought out, it seems to me may be this. If some of us go home and find a patient with seven kinks, let us not conclude that because somebody up in Worcester got away with those resections the thing for us to do is to remove those seven kinks by multiple resections. I believe there is an indication for this heavy surgery of the intestinal tract, a positive indication where something is necessary to save life. Then let us balance our judgment as best we may, and if we don't win out we will have the satisfaction of having done the best we can. And of course if we do win, it is a grand and glorious feeling, justifying a man for living, and neutralizing some of his previous misdeeds. I do not know that the essayist had any misdeeds,—being a surgeon, of course he must have,—but the fact that a member of the profession can bring human life from the very brink of the grave by a procedure of this kind, is certainly very remarkable.

I recently had a resection which I did in emergency, and I wish now that I had known something of the procedure of which Dr. Gage spoke, of putting a tube into the jejunum.

Dr. D. F. Jones, Boston: Dr. Hunt's report is excellent and the case a brilliant one. Dr. Hunt did not tell us the length of time elapsing between the injury and the operation, which is of the greatest importance. The high mortality in abdominal wounds in the A. E. F. was at least partly due to delay in getting them to the hospitals quickly enough.

In regard to the enterostomy which was done for the relief of the distention, this is one of the most important principles in intestinal surgery. Instead of a Mixter tube, however, I prefer a catheter put into the bowel by the Witzel method. It is simply and quickly done and allows gas and liquids to escape rapidly enough to relieve the patient. This avoids leakage from the bowel into the wound and onto the skin, and when the necessity for drainage is passed, the tube can be withdrawn without leakage from the bowel.

Jejunostomy in obstruction, as suggested by Dr. Summers and referred to by Dr. Gage, seems rational, and an analogous procedure is a caecostomy in obstruction in the sigmoid. This gives relief and is of great advantage if a resection is to be done later.

In a suture of the intestine, I believe that catgut has a great advantage over silk. A continuous suture of catgut can be put in rapidly and without fear of stricture later, for the catgut absorbs and allows the bowel to dilate, while a continuous suture of silk or linen remains and causes a cicatricial band about the bowel because it acts as a foreign body.

In any intestinal anastomosis, an enterostomy by the Witzel method above the line of suture is an excellent safety valve, and gives the greatest relief to the patient from distention and to the surgeon from worry about the line of sutures if the patient becomes distended.

Dr. Lincoln Davis, Boston: I find myself in absolute accord with what Dr. Hunt has said in his conclusions, and certainly his result was a very brilliant one. I think, however, that ordinarily with bullet wounds, resections will not be required. With a perforating bullet wound, in the majority of cases, you are able to turn in the rent and suture.

It should be emphasized that in these cases of perforations of the intestine by bullet wounds a thorough search of the intestinal canal should be made. Of course there is a certain amount of shock connected with running through the whole length of the intestine. However, if you don't make a complete search you are likely to overlook a perforation. I remember a case where a thief grappled with an M. P. The latter got out his automatic and shot the man seven times. He had a large number of perforations of the intestine, which were closed, but he died. At autopsy it was found that a perforation of the rectum was overlooked. You have to go through the whole length of the canal to be sure you have closed all the perforations that exist.

In regard to doing an enterostomy in cases of obstruction without exploration of the lesion, it seems to me that only exceptionally is it well to do that. I must say that I want to get some idea of what the lesion is, and where it is located, before putting in my enterostomy tube. If you can locate the lesion and find out its nature, it is going to help you very much when you come to your second operation.

Dr. Ernest L. Hunt (closing): I have nothing further to add, except that if I have rightly interpreted what I have read on the subject, enterostomy is a very old operation. It was successfully done as far back as 1787. In 1840 Nélaton popularized it, and it bore his name for a number of years. In the older surgeries considerable space is devoted to it. The conservative of today was the radical of yesterday. Somebody came along and did a resection for ruptured intestine, cleaned up the peritoneum, closed up the abdomen and got away with it and from that time the use of enterostomy began to decline. A step forward to our better technique had been taken.

In the past eight or ten years there has been a lot of work done on the toxic substances found in the obstructed duodenum. Dr. Fred Murphy did important work in this field, and there are many others. There is controversy over what the toxic substance is. Dragstedt and his co-workers say that it is a split product of proteid, due to bacterial action. Whipple considered it to be a proteose. The point is that it is what kills, it is the thing to get rid of, and that is the reason that jejunostomy does the trick.

Results of Cholecystectomy with Particular Reference to Dilatation of the Common Duct.

By John Homans, M.D., Boston.

[From the Surgical Clinic of the Peter Bent Brigham Hospital.]

The work of Judd and Mann in 1917 recalled attention to the anatomical changes which follow removal of the gall-bladder. These changes had long been known from the experimental standpoint but their clinical significance had been neglected. It is unnecessary at the present time to adduce proof that loss of the gall-bladder causes dilatation of the biliary ducts outside the liver. This dilatation was first discovered by Oddi in 1885 and since that time various physiologists have been able to furnish an explanation, if not of the function of the gall-bladder, at least of the changes which follow its loss.

It may, then, be confidently stated that the presence of a sphincter muscle at the lower end of the common bile duct prevents the flow of bile into the duodenum under normal fasting conditions; that the sphincter is capable of resisting the pressure of the bile as secreted by the liver; that the sphincter relaxes and allows the bile to escape into the intestine under the influence of the ingestion of food and of certain chemical substances placed in the duodenum; that this control is a reflex one following the law of "contrary innervation," which allows for the relaxation of a tube behind the sphincter when the latter is closed and for the relaxation of the sphincter when the tube contracts to expel its contents; that the gall-bladder fills with bile during a fast, adds mucus to the bile, and empties coincidently with relaxation of the duodenal papilla. Thus the gall-bladder, although it is capable of holding only a very small percentage of the bile secreted in twenty-four hours, aids in maintaining the intermittent flow of bile into the intestine, and the loss of this function is sufficiently important to cause dilatation of the biliary ducts behind the sphincter when the gall-bladder is removed. With dilatation of the ducts there finally occurs a relaxation of the sphincter so that in the end not only are the ducts dilated but the tone of the sphincter is lost and bile pours continuously into the duodenum.

Although cholecystectomy induces these changes, there is nothing to show that they have any pathological significance. Indeed, so many patients have enjoyed for years perfect health, following removal of their gall-bladders that there can be little question of the harmlessness of the loss of this organ. On the other hand, instances of failure to cure by cholecystectomy symptoms supposedly referable to disease of the gall-bladder have led a number of surgeons to feel that, while cholecystectomy may be harmless as an operation of necessity, it may fail to be curative as an operation of choice.

It has seemed possible that some light might be thrown upon the results of gall-bladder removal, especially in relation to the duct dilatation which follows, by studying, not only the results of a considerable series of cholecystectomies, but also the operative findings, with especial reference to the condition of the common duct at the time the operation was performed. For, if the complete loss of function of the gall-bladder within the body is equivalent, as it would appear to be, to cholecystectomy, one would expect to see, in the presence of a functionless gall-bladder, the same changes in the common and hepatic ducts as are presumed to occur following its removal.

It was planned, therefore, in going over a series of some 250 cases at the Brigham Hospital,* to discover, if possible, whether the ducts were dilated in the presence of an obvious loss of the normal function of the gall-bladder, and whether any particular symptoms corresponded to this condition. It also seemed desirable to know whether there was any difference between the future of a person whose gall-bladder was removed in the presence of ducts already dilated, and that of another whose ducts at operation were obviously normal. It was realized that, since the investigation covered a series in which operations were performed by a number of different individuals whose standards of the normal and abnormal might well have little in common, the results of such an investigation would have to be interpreted in a very broad way, even though the cases in which the operative findings were at all uncertain were rigidly excluded. Allowance is made for this personal equation in the answers to the questions propounded.

Before proceeding to these answers it would be well to know what are the immediate and remote results of gall-bladder removal in the whole series. By immediate results I mean, of course, the operative mortality, which proves to be 5.4% in 223 gall-bladder removals, from January, 1913, to January, 1919. It makes no distinction between operations upon the gall-bladder alone and those which include common duct exploration and drainage. By remote results I refer to the operative cures and failures in respect to the symptoms for which operation was performed, as interpreted several years after operation *by the patients themselves*. Few of these patients have been followed longer than four years; some not longer than one and one-half. Probably five years should elapse before results can fairly be judged, but in a shifting city population the criteria here employed for estimating cures and failures are satisfactory enough.

Of the 223 patents subjected to cholecystectomy, 12 died in consequence of the operation. Of the remaining 211, 46 have not been traced, leaving only 165 patients among whom the percentages of successes and failures can be established. Of these, six have had recurrences and may be called failures, 32 are improved but still suffer from symptoms more or less similar to those for which operation was performed, and the remaining 127 patients (77% of the traced cases) can be considered well as regards the cure of complaints directly or indirectly referable to the gall-bladder and biliary passages.

THE OCCURRENCE OF DILATATION OF THE COMMON AND HEPATIC DUCTS.

In order to study the occurrence and symptoms of common duct dilatation, the series has been divided into classes according to the operative findings. It seemed to me fundamental that if removal of the gall-bladder causes common duct dilatation, the duct should be found dilated when there was clear evidence at operation that the gall-bladder had been long out of function, and should not be found dilated in the presence of a functioning gall-bladder. This proved, in a general way, to be the case. Among forty-six patients in whom the gall-bladder* was completely out of commission the common duct† was definitely dilated in forty, while in six it was described as normal in size. In a little more than half of the forty with dilated common duct, stones were found in the duct, but in the remainder—eighteen, to be exact—no stones were discovered. Most of these ducts were actually opened in search of stones, and the operator was struck by the fact that none were to be found. I should not care to contend that stones in the common duct do not account for its dilatation. Evidence that a functionless gall-bladder calls for duct dilatation lies rather in the small proportion of normal ducts found with a contracted gall-bladder. There is one instance which illustrates the course of the dilatation. Surgical. 1911; long history of cholecystitis characterized by attacks of sudden sharp pain below right costal border radiating to back below right shoulder, without jaundice; first operation October 17, 1914, drainage of gall-bladder with removal of stones; the gall-bladder was functioning, the common duct normal. Recurrence of symptoms, attack exactly similar to previous ones; second operation July 18, 1916; gall-bladder thick, solid, small, contained new formed stones, evidently not functioning; common duct dilated, contained no stones, drained; gall-bladder removed. Result, two years later, reported "that she never felt better." In this case, as in the others in which no stones were found in the dilated common duct, one may believe that a stone had been present and had recently been passed, but the evidence, as in this case, is all the other way. Here, the dilated common duct is clearly no bar to perfect health.

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* The operations in this series were performed by Drs. David Cheever and John Homans of the Visiting Staff, and Drs. Fred [illegible] and Conrad Jacobson, formerly of the Resident Staff.

* It was very difficult to determine whether or not a gall-bladder was functionless. Descriptions such as "contracted tightly on a mass of stones" or "the gall-bladder was a hard nubbin" were conclusive. The pathological reports were always consulted. In general, if the gall-bladder was said to contain bile, it was held to be functioning, however many stones might be present, since its expansile properties could not then be denied. The error of interpretation is probably in the direction of calling some gall-bladders "functioning" which probably were not.

† In determining whether or not a duct was actually dilated, definite descriptions of size were for the most part followed. Statements like "the size of my thumb" or "admitted the forefinger" were considered final. When the operator's statements were [illegible] consistent the fact that he described the duct as "dilated" was considered sufficient. The descriptions of stones removed from the ducts were often corroborative.

There are several other ways of getting at the relations between gall-bladder function and common duct dilatation. There should be few cases showing a functioning gall-bladder and dilated common duct. I find eighteen of these in the whole series—rather more than are consistent with the hypothesis under investigation. But of the eighteen cases, ten were found to have common duct stones, which of themselves might account for the dilatation. Of the remaining eight, three had been jaundiced at various times, which suggests duct obstruction whether or not stones had ever been present. The remainder are unexplained.

Up to this time I have spoken only of the cases in which the gall-bladder had apparently been functionless for a long time. There is a large division of the series, principally of acute and subacute cholecystitis, in which the evidence by symptom and at operation showed that the gall-bladder had recently become functionless[*] (stones impacted in the cystic duct and similar conditions). Of the forty-nine cases of this character, eighteen were found to have dilated common ducts, while in twenty-seven the common duct appeared normal. If dilatation habitually lags some weeks behind cholecystectomy (or loss of gall-bladder function), one would expect about this proportion when the loss of function has clearly been recent, but one would equally expect to find, among the instances of dilated ducts, many without stones. Indeed, among the eighteen, common duct stones were found in seven, none in eleven.

In order to be scrupulously fair in interpreting these observations, I have had to exclude all cases in which the operative account is unsatisfactory. To illustrate, I found thirty-nine cases in which the gall-bladder was clearly functionless and twenty in which it was functioning, with no conclusions in either instance as to the size of the common duct, and fifteen cases in which no conclusions could be drawn as to the function of the gall-bladder whether or not the ducts were enlarged. Leaving such cases out of consideration, it appears to be true that, as a rule, loss of function of the gall-bladder is accompanied by dilatation of the extra-hepatic ducts; and that these ducts rarely dilate, in the absence of common duct stones, when the gall-bladder is functioning. It may even happen that duct dilatation *precedes* the appearance of stones within the common duct. For if the common, hepatic and *cystic* ducts dilate in the presence of a functionless gall-bladder loaded with stones, the dilatation would obviously encourage the escape of stones from the gall-bladder into the ducts.

SYMPTOMS.

There remains to be considered the possibility of a symptom complex associated with dilatation of the common duct, apart, of course, from the jaundice which accompanies the dilatation of actual obstruction. Before touching upon this question I must admit that I know of *no* symptoms definitely diagnostic of disease of the common duct as distinguished from the gall-bladder. In a general way, jaundice is the most reliable indication, yet attacks of acute cholecystitis may be accompanied by infection within the ducts causing biliary obstruction in the absence of stone. And again, stones may be present in the ducts without causing jaundice, or indeed pain.

As to pain, a careful study of the symptoms in a long series of cases leaves one with the conviction that pain in disease of the gall-bladder and biliary passages is of the "referred" type, manifesting itself through local mesenteric connections by way of the spinal cord. Just as early appendicular pain is referred to the umbilical region, so gall-bladder or duct colic is usually referred to the back, shoulders and even down one or both arms. I will not trouble you

[*] Experimentally, dilatation of the duct after cholecystectomy occurs in six weeks to two months, possibly less.

with a number of histories in which the symptoms caused by gall-bladder disease and common duct stone are identical, but content myself with one in which the symptoms of common duct stone occur after gall-bladder removal.

Surgical, 11127; first admitted March 21, 1916; for four years attacks of severe knife-like epigastric pain radiating to right back and shoulder and requiring morphia; often jaundiced. Operation disclosed a "nubbin" of gall-bladder, which was removed, and a large common duct in which no stones were found. No further attacks until three years later. Recurrence of attacks; epigastric pain radiating along right costal margin and into back between scapulae; jaundice. At the second operation, which has proved completely curative to date, an old facetted stone was found in a huge common duct, the size of one's thumb. Here is fully described pain due to common duct stone. There is no possible confusion with pain attributable to the gall-bladder, and yet I could quote history after history of pure gall-bladder disease with pain of identical character. As regards pain, then, there are no symptoms characteristic alone of a common duct lesion.

The gastric symptoms so characteristic of disease of the biliary apparatus seem likewise to play no favorites. "Indigestion," attacks of vomiting, gaseous distention, etc., are found familiarly with all sorts of lesions of the gall-bladder and ducts. Indeed, being reflex in character they appear with disease in almost any part of the upper intestinal tract and its appendages.

It may be judged, then, that it will be difficult to distinguish symptoms due to bile duct dilatation *per se.* Possibly light may be thrown upon this subject by examining the post-operative results in patients whose ducts are known to have been dilated at the time of operation, and by comparing the symptoms before and after cholecystectomy in the group of patients whose ducts at operation were of normal size, but presumably have since dilated.

In the first group (those whose ducts were found dilated at operation) are found 81 cases. Cholecystectomy was performed in all and resulted in a mortality of 6.2% (5 deaths). Of the surviving 76 patients, 19 cannot be traced; two have definite recurrence; eight are improved but suffer from some of their previous symptoms; and 47 (83% of the traced cases) are well one and one-half or more years after operation. Whether or not this is a reasonable percentage of cures, it is apparent that in the majority a dilated common duct is no bar to a return to health.

In the second class (those whose ducts were of normal size at operation but presumably have since become dilated) are found 92 cases. Cholecystectomy was performed in all and resulted in a mortality of 1.1% (one death).* Of the 91 surviving patients, 21 cannot be traced; one has definite recurrence; 18 are improved but suffer from some of their previous symptoms; and 51 (73% of the traced cases) are well. Here there is a somewhat lower percentage of complete cures, but in no patients of this class have new late symptoms suggestive of disorders related to dilatation of the ducts appeared.

These investigations show, then, that dilatation of the ducts presents no characteristic symptoms and is not an adverse influence preventing a cure after cholecystectomy, nor are any new symptoms discoverable as a consequence of the duct dilatation which cholecystectomy may be expected to produce. These findings do not deny the existence of nutritional disturbances which may be occasioned through alteration in the secretory pressure of the liver cells which relaxation of the ducts and the sphincter may well bring about. At present there are no tests of liver function available to determine such matters.

As to other possible by-effects of duct dilatation, it may be suggested that stone formation within the ducts is encouraged. Against this possibility is the experimental evidence that dilatation is succeeded by relaxation of the sphincter at the papilla of Vater and that the flow of bile is thereafter continuous. This would tend to prevent stagnation of bile and discourage stone formation. In this connection Judd has called attention to a group of patients who have noted the passage of large amounts of bile from the bowels after cholecystectomy, a symptom which has not persisted. It has not been observed in this series. Another possible complication might conceivably follow duct dilatation and sphincter relaxation. I refer to regurgitation of the duodenal contents into the ducts. Against infection from this source is the fact that the duodenal contents are notably free from bacteria. There may, however, be a real danger from self-digestion by activated pancreatic juice, or from invasion of the ducts by intestinal parasites (as suggested by Judd and Mann).

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* The cause of the higher mortality in the first class, as opposed to the low mortality in this, is clearly due to the increased danger of operation upon the common duct.

Finally, I should like to say a word as to the border-line cases in which cholecystectomy would seem to have a doubtful value, cases of mild chronic cholecystitis with or without stone, in which the gall-bladder is presumably functioning, the common duct normal. To this class belong most of the neurasthenics and persons with reflex intestinal disturbances for which exploratory operation is proposed. Surgeons may be justified in feeling that they are doing unnecessarily radical operations and perhaps actual harm by removing the gall-bladder in such patients. While it would be foolish to say that such cholecystectomies are harmless or that accidents usually due to inexpert surgery are not likely to occur, it just happens that into the category described above there fall 52 cases in the Brigham series, with an operative mortality of zero. Thirty-eight had stones; fourteen did not. None, as far as the traced cases show, were made worse by operation. But among these patients is found the highest percentage of incomplete cures as compared with the patients who consider themselves well. Of the 52 patients, 12 were untraced; one was completely unrelieved; 15 (37.5% of the traced cases) are more or less improved; and 24 (60% of the traced cases) are well. Thus we are not getting satisfactory results from our treatment of these patients. We need to know more about the pathology and indications for operation, but we have no reason to assume that duct dilatation is responsible for our failures.

CONCLUSIONS.

1. There is satisfactory experimental evidence that removal of the gall-bladder is followed by dilatation of the extrahepatic biliary ducts.

2. There is evidence that destruction or loss of function of the gall-bladder within the human body is frequently followed by duct dilatation.

3. There is evidence that duct dilatation occasionally occurs while the gall-bladder is functioning and in the absence of common duct stone.

4. There are no symptoms characteristic of dilatation of the biliary ducts.

5. There is no evidence that dilatation of the biliary ducts is actually harmful to the individual.

BIBLIOGRAPHY.

Doyon, M.: De l'action exercée par le systeme nerveux sur l'appariel excreteur de la bile. Archives de Physiologie, Vol. xxvi, 1894, p. 19.

Hendrickson, W. F.: A Study of the Musculature of the Entire Extra-Hepatic Biliary System, Including that of the Duodenal Portion of the Common Bile-Duct and of the Sphincter. Johns Hopkins Hospital Bulletin, ix, 1898, p. 221.

Bruno, G. G.: The Bile as an Important Agency in Digestion. Archiv. des Sciences Biologiques, Vol. vii, Nos. 1 and 2, 1899.

Bainbridge, F. A., and Dale, H. H.: The Contractile Mechanism of the Gall-bladder and its Extrinsic Nervous Control. Jour of Physiol. (Brit.), 1905-6, Vol. xxx, p. 138.

Pavlov, I. P.: The work of the Digestive Glands. Tr. by W. H. Thompson, London, 1910.

Archibald, Edward: A New Factor in the Causation of Pancreatitis. XVII International Congress of Medicine, London, 1913, Pt. 2, Section 7, Surgery, p. 21.

Oddi: Luciani's "Human Physiology," Vol. ii, Internal Secretion, Digestion, Excretion, the Skin, Chapters 3, 4, and 5. Tr. by F. A. Welby, London, 1913.

Mitchell, W. T., Jr., and Stifel, R. E.: The Pressure of Bile Secretion during Chronic Obstruction of the Common Bile Duct. Johns Hopkins Hosp. Bull., 1916, Vol. xxvii, p. 78.

Meltzer, S. J.: Disturbance of the Law of Contrary Innervation as a Pathogenetic Factor in the Diseases of the Bile Ducts and the Gall-bladder. Am. Jour. Med. Sci., 1917, Vol. cliii, p. 469.

Judd, E. S., and Mann, F. C.: The Effect of Removal of the Gall-bladder. Surg., Gyn., and Obstet., April, 1917, Vol. xxiv, No. 4, p. 437.

Judd, E. S.: Surgery of the Gall-bladder and the Biliary Ducts. Jour. A. M. A., 1918, Vol. lxxi, No. 71, pp. 79-82. (Also Collected Papers of the Mayo Clinic, Vol. x, 1918, pp. 106-114.)

Judd, E. S.: Recurrence of Symptoms Following Operations on the Biliary Tract. Annals of Surgery, 1918, Vol. lxvii, pp. 473-488. (Also Collected Papers of the Mayo Clinic, Vol. x, 1918, pp. 115-132.)

Mann, F. C.: The Function of the Gall-bladder—An Experimental Study. New Orleans Med. and Surg. Jour., 1918, Vol. lxxi, pp. 80-92. (Also Collected Papers of the Mayo Clinic, Vol. x, 1918, pp. 94-105.)

Lyon, B. B. Vincent: Diagnosis and Treatment of Diseases of the Gall-bladder and Biliary Ducts. Jour. A. M. A., Vol. lxxiii, No. 13, p. 980, Sept. 27, 1919.

DISCUSSION.

Dr. Fred B. Lund, Boston: It has been stated in this meeting that it is customary and perfunctory to compliment the reader of a paper, but I am glad to do it in this case because I think Dr. Homans has made a thorough study of his subject and analyzed it with great care. His conclusions bear us out in what we are doing.

I remember a few years ago when I was in the medical school we learned about bile under physiology, and learned that certain animals did not have gall-bladders—the horse, the camel, the mouse, the dove, the cuckoo, and the whale, likewise the elephant and the ostrich. Those were mostly vegetarian animals as far as I can remember. Carnivorous animals have gall-bladders, which is fortunate, because that gives us the cat and dog to take for our experiments. It is evident that the purpose of the gall-bladder is for the relief of tension in the bile duct. Bile would not ordinarily get into the gall-bladder unless the tension in the bile passages was greater than the intra-abdominal tension. In order to get there it has got to run backward and upward off the main track. The tension which forces it there is maintained under normal conditions by Oddi's sphincter, and when that relaxes the tension is relieved. The gall-bladder is like a blister on a tire; it is a safety valve. It is not big enough to act as a reservoir for bile since the amount it contains is ridiculously small compared with the amount of bile secreted every 24 hours. We all know that in animals if you tie the common duct they die quickly with multiple necroses of the liver, whereas human beings will stand biliary obstruction much longer than animals. A normal gall-bladder is just about as elastic as the ducts, no more, no less. You all know that when you have obstruction of the common duct by cancer, then you get a dilatation of the common duct and gall-bladder and when you feel the distended gall-bladder and ducts you find that the walls are all just about the same thickness so that one will dilate as soon as the other. In the removal of the gall-bladder, which extends the elastic area, it is perfectly natural that the common duct should dilate at once.

Another thing that I know has been observed experimentally about the dilatation of ducts is that, after the gall-bladder has been removed and the cystic duct tied close to the gall-bladder, in certain cases dilatation in that cystic duct has taken place so as to make a sort of second-hand gall-bladder. This must be the result of normal pressure of bile. Both infection in the gall-bladder and the presence of stones cause inflammation, and in an unsupported round body like the gall-bladder it contracts till it gets down to a little bit of a nubbin on the side of the duct, and then you usually find a common duct stone; but Dr. Homans has demonstrated that under those circumstances you may find simply a dilated duct. It is very difficult to say whether all the dilatations that you get where the gall-bladder has been out of commission are due to dilatation consequent on removal of the gall-bladder, or to the presence of stones. The presence of stones in the common duct may have caused that dilatation, and the stones afterwards passed so that they were not found. For that reason I don't feel that Dr. Homans has quite proved his case, although no doubt he is probably right. At any rate it does not make much difference.

In these cases we have always got to open the duct and if we don't find stones, then we have done no great harm.

In regard to jaundice, I have found the deepest jaundice in cases where there were no stones in the common duct, but a stone impacted in the cystic duct lying against the common duct. Inflammatory swelling takes place, results in obstruction and the jaundice is very intense. I have found another class of cases where you can make a pretty good guess at the presence of stones in the duct. Those are cases of slight jaundice coming on and going away, an intermittent recurrent jaundice with chills. If a patient shows the symptoms of pain and intermittent or recurrent jaundice it behooves you to examine the common duct with special care, because it almost always means a stone that goes down and blocks the sphincter. Then you get your jaundice and chills. The very dilatation of the duct behind the stone sets it free, and it floats back.

There is a great deal that we might say about these cases, but I will say just one word more and then I will be done. I think Dr. Homans has shown what we are very glad to know, that the patients are certainly in as good health with the gall-bladder removed, and with their ducts dilated as they were under nomal conditions, *i.e.*, before the gall stones were present. If the sphincter is acting so that the bile is only poured out when the stimulus of food calls for it, we should expect patients to be perfectly well, but we might think if the bile is escaping all the time it would affect nutrition. However, we have evidence that patients with permanently dilated and thickened common ducts are perfectly well, and where, at operation, we have got dilatation and thickening we are certainly less in need of the external drainage, of which, after all, we are using less and less all the time.

Dr. George W. W. Brewster, Boston: Dr. Homans' paper is certainly most interesting and shows a good study of this sort of cases. It offers many opportunities for discussion. Dr. Lund has covered many of the points that I had intended to mention.

From a practical point of view, the question of what to do in the face of finding a dilated common duct at operation, is what we want solved. Given a diseased gall-bladder, gall-stones, or cholecystitis and a dilated common duct. What does that mean? We have been taught in the past that in gall-bladder surgery when we found an enlarged common duct that meant probably stones, whether they could be felt or not, and that exploration of the common duct was indicated simply from the presence of dilatation. In many cases it is possible to feel the stone, but on the other hand no stone could be found in many cases.

If Dr. Homans is right that the common duct can dilate without disease of the gall-bladder, without stones, it might be possible in the future to be guided somewhat in our indications for opening a dilated common duct. I don't think the fact that we don't find the stone proves that there was no stone there, or that it has not been there. However, I think we need further observations or statistics as to the presence of dilatation without stones to make one feel justified in not exploring a common duct.

Dr. D. F. Jones: Dr. Homans' paper is most interesting and instructive. I wish, however, that he could have given us some aid to determine as to whether there are stones in the common duct or not.

Dr. Brewster has told us what to do when the common duct is dilated. I agree with him that it should be explored when the condition of the patient permits, whenever found dilated, whether the gall-bladder has been out of commission or not. It is not at all infrequent that stones are found when there are no symptoms suggesting stone in the common duct. Stones in the duct are very elusive and at times very difficult to feel, either because of their position or size. One of the great surgeons of this country asked another what he found in the common duct of a case he had operated upon twice for jaundice. The second surgeon said he had removed a stone one-half inch in diameter from the common duct, which the first surgeon had overlooked in two operations.

DR. HOMANS (closing): In regard to what Dr. Lund has said about the common duct, I quite agree with him that when dilated it is usually thickened. It is, of course, a question whether a stone may not have been present in such ducts, but the question here is whether the duct may not dilate in the absence of a stone. I may be wrong, yet I feel quite certain that ducts do habitually dilate in the presence of a functionless gall-bladder. Certainly the common duct does dilate in the absence of a stone on many occasions.

As to the diagnosis of stone in the common duct, I agree with Dr. Lund that one ought to be able to make a diagnosis in many cases.

In regard to what Dr. Brewster and Dr. Jones have said, I should never dare to maintain that a dilated common duct contained no stone without a most thorough investigation. I almost always open a dilated duct and so does every surgeon I know. However, we are all accustomed to finding occasionally that no stones are present; whether we ought to be able to distinguish a dilated duct which has no stones from a dilated duct containing stones without opening the duct, I cannot pretend in this paper to be able to say.

ACUTE INTESTINAL OBSTRUCTION: A STUDY OF A SECOND SERIES OF CASES FROM THE MASSACHUSETTS GENERAL HOSPITAL.

BY EDWARD P. RICHARDSON, M.D., F.A.C.S., BOSTON.

ADVANCES in diagnosis and operative treatment have reduced largely the mortality of many surgical emergencies arising within the abdomen. This is particularly true of appendicitis, of gall-bladder disease, and of perforations of the alimentary tract. In acute intestinal obstruction we have in most cases a mechanical condition, which it would seem possible to relieve by the mechanical measures available to surgery. Yet a proportionate reduction of mortality has not been obtained in intestinal obstruction. For this reason, it has seemed of interest to place before the Society an analysis of a series of cases, in comparison with a previous series from the same clinic, with the hope that some definite evidence may be shown of progress in the treatment of this condition.

In 1908 C. L. Scudder[1] reported a series of 121 cases of acute intestinal obstruction operated on at the Massachusetts General Hospital during the preceding 10 years, from 1898 through 1907. The present paper includes a second series of 118 cases, in direct continuation, occurring through the ten years, 1908 to 1917 inclusive. Since it is difficult to compare results from different institutions, made up of varying types of cases selected and grouped according to different systems, an effort has been made to have the present series as nearly as possible parallel to the previous one. It includes cases of acute mechanical obstruction, in which operation was demanded as an immediate necessity. All cases of chronic or partial obstruction which gave the surgeon opportunity to select the time for operation, have been excluded. All cases of strangulated external hernia and all obstructions due to tumors, intestinal and extra-intestinal, except in so far as such tumors were an exciting cause of intussusception, have been excluded. A most important question, in compiling such a series, is which of the many borderline cases should be included as acute mechanical obstruction. To this end Dr. Scudder has gone over with me certain of the doubtful cases and I wish to thank him for his assistance and suggestions.

The doubtful cases occur chiefly among those in which obstruction occurs during convalescence from laparotomy. Here the decision lies as to whether the case should be included as acute intestinal obstruction, or excluded as paralytic ileus from peritonitis. The point of view has been taken that any operation undertaken to relieve distention and obstipation by freeing adhesions or draining the bowel following laparotomy, was evidence that the surgeon felt that there was a mechanical factor in the obstruction, and such cases have in general been included in the series.

The fatalities of the series include deaths from any cause while in the hospital, whether or not a direct result of intestinal obstruction and the operation to relieve it. Two deaths occurring shortly after transfer to another institution, and possibly subsequent to further operation, are not included. Nor are seven deaths included, presumably from obstruction (confirmed in three instances by autopsy) in which, for one reason or another, operation was not undertaken.

The cases are grouped as in the previous series. In many instances it is hard to decide to which group a case should be assigned, since certain cases are not sharply defined and others might be assigned to two or more classes, as for instance, a case occurring several months after operation, due to adhesions, and presenting a volvulus. Such an instance would be classed as volvulus, since from the point of view of operation and prognosis, this is the important feature of the case. The grouping must be considered merely approximate, but nevertheless brings out certain features.

Each admission is counted as one case. Three cases were admitted twice for acute obstruction, making 118 cases, but only 115 individuals, as compared with 121 cases in the previous series. These 118 cases were operated on by twenty-three surgeons, the largest number falling to any one operator was sixteen. If acute obstruction recurred during the patient's stay in the hospital, as happened in three instances, it is counted as one case, and the final result only is recorded.

Of 114 individuals, 67 were in males and 47 in females, showing the usual predominance of this condition in males. The following table of the age of patients in decades is given merely to emphasize the fact that a great proportion of cases, above two-thirds, occur in people of forty or under, and the consequent economic importance of the type of individual lost in deaths from obstruction. It also serves to show that the results of operation are distinctly better in children and young adults than in infants or older people.

TABLE I.

	CASES	RE-COVERED	DIED	PER CENT. MORTALITY
Under 1 year	11	3	8	72.7%
1—10 years	6	5	1	16.6%
11—20 "	25	18	7	28.0%
21—30 "	15	13	2	13.3%
31—40 "	27	12	15	55.5%
41—50 "	10	6	4	40.0%
51—60 "	11	5	6	54.5%
61—70 "	9	4	5	55.5%
71—76 "	3	2	1	33.3%

Table II shows the general results of operation for the series in comparison with C. L. Scudder's previous series. The general mortality of 41.5% in 118 cases operated upon, as compared with a previous mortality of 60%, shows a drop, along certain lines particularly, but the results still are far from satisfactory. I propose to go into the different groups more in detail and from various points of view, in order to throw as much light as possible on the causes of mortality, in the hope of pointing out if possible, the lines along which further improvement may be hoped for.

The cases of early post-operative obstruction, twenty-nine in number, include acute obstructions occurring shortly after laparotomy as a post-operative complication, the time included being set somewhat arbitrarily at the first four weeks following operation, as comprising the usual period of convalescence. Obstruction occurred most commonly after appendectomy, with drainage, and next most frequently after various pelvic operations on women. Twenty cases followed appendectomy with drainage, six cases various pelvic operations on women, two cases simple appendectomy, and one resection of jejunum and closure of gastroenterostomy stoma. Obstruction developed eleven times in the first week, twelve times in the second, four times in the third and once only in the fourth week. The region involved was stated to be the small intestine twenty times, the large intestine, twice.

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TABLE II.

TYPE OF CASES	1898-1907. C. L. SCUDDER				1908-1917			
	Cases	R.	D.	Mortality	Cases	R.	D.	Mortality
Early post-operative obstruction (first 4 weeks after operation)	18	5	13	72.2%	29	22	7	24.1%
Late post-operative obstruction (developing after 4 weeks)	19	13	6	31.6%	28	17	11	39.3%
Bands and adhesions without previous operation	33	15	18	54.5%	14	7	7	50.0%
Meckel's diverticulum	9	2	7	77.7%	4	2	2	50.0%
Volvulus	9	0	9	100.0%	16	12	4	25.0%
Intussusception	27	13	14	51.8%	20	8	12	60.0%
Mesenteric thrombosis	1	0	1	100.0%	5	1	4	80.0%
Congenital anomalies	2	0	2	100.0%				
Stone in gut	1	0	1	100.0%	1	0	1	100.0%
Internal hernia	2	0	2	100.0%	1	0	1	100.0%
TOTAL	121	48	73	60.4%	118	69	49	41.5%

In regard to treatment, these cases represent rather a special class, in that the obstruction is ordinarily due to recent inflammatory adhesions, possibly assisted by local paralysis of the bowel from sepsis, with the result that the obstruction is of a temporary rather than of a permanent nature, and so differs from obstruction due to firmly organized cicatricial bands and adhesions. Under these conditions I have felt, as pointed out in a previous communication,[2] that enterostomy without exploration was a more favorable means of treatment in this than in other forms of obstruction. In this series separation of adhesions under a general anesthetic was the usual method of treatment. This was done in eleven instances with eleven recoveries, but the obstruction recurred in three cases. Separation of adhesions resulted in a tear of the bowel once, and such damage as to require resection another time. Enterostomy or colostomy alone was done in eight cases with seven recoveries and two secondary operations for closure of the fistula. Separation of adhesions with an enterostomy or caecostomy added was done in eight cases with six deaths. The danger of overlooking a strangulated loop by doing an enterostomy under local anesthesia without exploration is not great, as only one case (included under volvulus) gave evidence of strangulation. The conclusion which I should draw from these facts is that if the condition of the patient is such, in early post-operative obstruction, as to appear to make drainage of the bowel indicated, it is best done under a local anesthetic without exploration or separation of the adhesions causing the obstruction.

The drop in the mortality over the previous series, from 72% to 24%, is marked and shows the importance of close observation and early intervention, ordinarily within forty-eight hours, when symptoms of obstruction develop. The deaths of this series are perhaps more chargeable to the original sepsis than to the obstruction. Five of these seven deaths came to autopsy. Three showed peritonitis, one septicemia and thrombosis, and one an empyema and lung abscess. Improvement in results in this class of case depends more on early diagnosis of the original conditions and care in technique during the primary operation than on other factors.

The second group, late post-operative obstruction, twenty-eight in number, followed laparotomies at periods varying from six weeks to fourteen years and were due to peritoneal adhesions presumably a result of the previous operation. Nine cases developed within the first year, three in the second, four in the third, and two in the fourth. The original operations were similar in type with those of the first group. The primary operation was appendectomy in fifteen instances, seven times stated to have been with drainage; various pelvic operations in women in ten instances, intestinal anastomosis twice, and reduction of intussusception once. Obstruction occurred in the small bowel in the cases in which its location could be determined, and resulted in strangulation of the bowel six times in twenty-eight cases. The mortality shows a slight increase over the previous series, from 31.6% to 39.3%.

Bands or adhesions without previous operation were the cause of obstruction in fourteen cases, as compared with thirty-three in the previous series. They present a similar type of obstruction to the preceding class, being due in most cases to peritoneal adhesions of inflammatory origin, more rarely to congenital bands. Obstruction occurred in all cases but one in the small intestine, and showed strangulation of the bowel four times, or in about an equal percentage of cases. The high mortality, 50% in this series, 54% in the previous one, I should attribute to the absence of an abdominal scar, which serves as an important clue pointing to obstruction as a cause of symptoms in doubtful cases. On account of more difficult diagnosis, it is probable that these cases came to operation somewhat later.

Meckel's diverticulum was the cause of obstruction in only four cases. Obstruction is complicated in these cases by the tendency of the diverticulum to necrose and perforate. The treatment was amputation of the diverticulum and freeing the bands and adhesions causing the obstruction. In one fatal case the extent of the necrosis of the diverticulum made resection of the bowel necessary. The mortality, although the cases are few, shows improvement from 77% to 50%.

Under volvulus are included all cases in which definite torsion of the intestine and its mesentery produced acute obstruction. The volvulus affected the small intestine eight times, the caecum and ascending colon five times, and the sigmoid three times. Volvulus of the caecum was possible in these cases from abnormal mobility of the caecum and ascending colon, amounting in one case to a marked congenital anomaly. In one instance, operated on two days after resection of a loop of small intestine for strangulated femoral hernia, a twist of the whole small intestine was found. The usual operation was reduction of the twist, in five instances with an added caecostomy or enterostomy. Only twice was resection necessary, with one death and one recovery. The mortality shows a marked improvement from 100% to 25%.

The cases of intussusception, twenty in number, show an increase in mortality from 51% to 60%. Eleven of these occurred in infants, of whom eight died. All these infants gave a history of bleeding from the rectum, and in eight instances showed on examination an abdominal tumor, while in two other cases the intussusception protruded from the rectum. One infant, in whom intussusception recurred twice, had an intestinal tumor, and appears twice in the series, finally dying after the third operation. In all the infants the entering point was the ileocaecal valve. The ages of the remaining eight individuals ranged from eight to seventy years; only two cases were under ten. Four cases showed a definite cause for the intussusception, which was a tumor of the intestinal wall twice, intestinal ulceration once, and a diverticulum once. In one of these patients the intussusception recurred once, the patient remaining cured after resection of a segment of bowel showing multiple papillomata. In the older cases bleeding from the rectum was not noted, and a palpable tumor was observed only three times. The intussusception was in the small intestine four times, and ileo-colic four times. There were five recoveries from the nine operations.

Reduction of the intussusception was possible in seventeen cases, with nine deaths. Of these, in one recovery the bowel was fixed to prevent recurrence, in another already mentioned resection was performed; in a third, enterostomy was added to the reduction. In two of the fatal cases, enterostomy as well as reduction was done. In one of these cases the viability of the bowel was so doubtful that the affected intestine was left outside the wound on the abdominal wall. In the three remaining fatal cases, in which reduction was not done, in two an enterostomy was made and the intussusception was left outside the wound; in the third the bowel tore across in attempting reduction. The mortality in these cases is high and an increase over the previous series is particularly discouraging. It is hard to attribute it to any definite factor, aside from the considerable lapse of time in many cases from the onset of the symptoms to operation.

Of the cases of mesenteric thrombosis, five in number, one recovered following the resection of 60 cm. of small intestine and immediate anastomosis. This condition is apt to show a particularly high leucocytosis, amounting in one case to 97,000, in another to 35,000. Bleeding from the bowel occurred in two instances. The four fatal cases represented a condition nearly hopeless from the outset, involving in three instances the small intestine and in one the large. Two cases which came to autopsy, one after resection, and the other following the lateral anastomosis and exclusion of the affected bowel by leaving it outside the wound, showed extension of the process over additional areas of the small intestine. The other two cases showed a diffuse process, one involving the small intestine, the other a great part of the large bowel. In the first an exploratory incision only was done, in the second an enterostomy was made, and as much involved large intestine as possible was left outside the wound. The occasional brilliant result from extensive resection is the only redeeming feature of an otherwise hopeless condition.

The two remaining cases, obstruction of the jejunum from a gall-stone or faecolith in a woman of seventy-one, and a man of twenty-six with hernia through the root of the mesentery of the small intestine, requiring resection of four feet of small bowel, were both fatal.

On account of the marked importance of interference with the blood supply to the bowel in intestinal obstruction, as shown by various experimenters, notably Murphy and Vincent,[3] it has seemed worth while to group the cases along another line, those which showed definite interference with the circulation of the mesenteric vessels, as cases of strangulation and volvulus, and those which had no evidence of such interference. The cases of intussusception have been omitted from this grouping, as being somewhat intermediate between the two classes. Of the cases without obstruction to the blood supply of the bowel, sixty in number, forty-two recovered and eighteen died, a mortality of 30%. Of thirty-four cases with interference to the blood supply, seventeen recovered and seventeen died, a mortality of 50.0%. In eleven of these cases, with strangulation of the bowel, resection was necessary, with seven deaths, a mortality of 63.7%. In four others resection was indicated but could not be carried out. In four cases it is doubtful whether or not strangulation existed. Of these two died and two recovered. These figures confirm well recognized clinical and experimental facts. It is well to note however, that the extreme distention of late acute obstruction produces marked interference with the circulation of the bowel wall, through stasis and congestion, without obstruction of the circulation of the mesentery.

A conspicuous feature in operating for acute obstruction is the occasional presence of blood-stained serum in the peritoneal cavity. Since this feature has some importance as a sign of strangulation, it has seemed worth while to analyze the cases in which it was noted. Of twenty-four cases with bloody serum, fifteen died, a mortality of 62.3%. In twenty cases the bloody fluid accompanied strangulation of the gut, intussusception, or mesenteric thrombosis. Bloody fluid was present in four cases in which no strangulation, thrombosis, or intussusception was found, and appeared to be the result of marked distention and congestion of the bowel. Conversely, in five cases of strangulation, three of intussusception, and one of mesenteric thrombosis, the peritoneal fluid was not bloody. When present, therefore, it demands a search for the cause of obstruction; its absence, particularly in early cases, does not exclude the possibility of strangulation.

It is a matter of common experience, confirmed by experimental evidence, that the higher the obstruction is, the more rapidly fatal. One would expect as well, a greater operative mortality, the higher the obstruction. Figures on this point are inconclusive. One hundred and three cases in which the level of obstruction could be approximately determined from the operative report, showed no marked variation according to the level of the point of obstruction.

PART OF BOWEL OBSTRUCTED	CASES	R	D	MORTALITY
Jejunum	8	5	3	37.5%
Ileum	28	20	8	28.0%
Small intestine (not further specified)	41	25	15	36.5%
Ileo-colic intussusception	15	5	10	66.6%
Large intestine ..	11	8	3	27.2%
TOTAL	103	63	39	

Volvulus of the caecum has been included as obstruction of the large intestine, although the actual point of obstruction in such cases might well be in the ileum. The cases in which the operative reports did not specify the level of the obstruction naturally include some of the worst cases, in which operation was hurried or incomplete.

The types of anesthesia and the results are given in the following table. Anesthesia was frequently induced by nitrous oxide, as a preliminary to ether. One death, due to spinal anesthesia before operation was begun, in a case of probable obstruction, is not included in the series on account of the uncertainty of diagnosis.

ANESTHESIA	CASES	R.	D.	MORTALITY
Ether	99	58	41	41.4%
Spinal anesthesia	7	6	1	14.4%
Spinal and general	2	1	1	
Local (novocaine)	4	2	2	
Novocaine and general	4	0	4	
Gas oxygen	2	2	0	
TOTAL	118			

The use of other forms of anesthesia than ether was too limited to draw conclusions, although the results of spinal anesthesia seem encouraging. The matter of anesthesia will be referred to later.

The type of operation employed depended on various factors, particularly the kind of obstruction, the circulation of the bowel and the condition of the patient. It is not possible from analysis of operative results to give any approximation of the value of various operations, since so many factors influence the outcome in each individual. On account of the multiplicity of operative procedures, it simplifies the situation to include them in the following groups: First, relief of obstruction only, such as separation of bands and adhesions, untwisting a volvulus, reducing an intussusception, sixty cases, sixteen deaths, a mortality of 26.6%. Second, relief of obstruction, plus drainage of the bowel, by enterostomy or colostomy, twenty-two cases, twelve deaths, a mortality of 54.5%. Third, drainage of the bowel by enterostomy or colostomy, fourteen cases, six deaths, a mortality of 42.8%. Fourth, cases requiring resection of the bowel, fifteen cases, eight deaths, a mortality of 53.3%. Fifth, operations incomplete or abandoned, seven cases, all died.

When enterostomy or colostomy was performed in this series, it was ordinarily done low, as near the probable point of obstruction as was practicable. In no case was a high enterostomy deliberately done on the basis of diminishing toxic absorption. The cases in which drainage of the bowel was done represent the bad risks, and the high mortality is no argument against the usefulness of the procedure. When resection was done, the ordinary method was to postpone anastomosis to a second stage. This was done in ten cases, of which five died before the second stage was attempted, and one was discharged. Of the remaining four, anastomosis was done in two cases at the end of two and four days. Both died. In two cases, who recovered, anastomosis was postponed for some weeks. Whether anastomosis should be done early or late depends on the level of the fistula and its tolerance by the patient, and no conclusions as to the favorable time can be drawn from these instances. In five cases an immediate anastomosis was done. Four of these survived. Two of the four cases, however, were relatively favorable. In one resection was done for damage to the bowel caused by separating adhesions, in the other it seemed advisable to remove papillomata which were the cause of intussusception. In most cases, the condition of the patient necessitated postponement of the anastomosis. It is not probable that more cases would have survived if anastomosis of the bowel had been done in the first stage. The only general conclusion to be drawn from these figures is that to get more satisfactory results, we should have more patients in the stage when simple relief of the obstruction is all that is necessary.

To sum up, analysis of a second series of cases of acute intestinal obstruction shows slight but definite progress in the results of treatment over the previous series. The mortality from operation shows a distinct drop, marked in some types of cases, slight or absent in others. The question now is along what lines we may expect further improvement. The factors most influencing the outcome of a given case, aside from variations in the age of the patient, level and cause of the obstruction, may be said to be the promptness of diagnosis and operation, the kind of anesthesia the type of operation and the method of operating, and the after care.

Of these factors the most important is early diagnosis and early operation. The value of this is shown in the group of cases in which obstruction developed during convalescence from operation. Here, in spite of septic complications, the mortality fell from 72% to 24%, largely because obstruction developed under close observation, so that early diagnosis and operation, ordinarily within forty-eight hours of the onset of symptoms, were both possible. If reduced to figures, the value of early diagnosis and operation is hard to demonstrate. Of one hundred cases in which an approximate estimate as to the duration of symptoms could be given, the cases recovering had had symptoms for 2.6 days; those dying for 4.2 days. Forty-six cases operated on approximately during the first forty-eight hours had a mortality of 32.5%, fifty-four cases operated on after two days had a mortality of 48.1%. These figures do not bring out the true value of early diagnosis, for the reason that the individual patient was not sent to the hospital because his symptoms had lasted so many days or hours, but because they became alarming. In some cases, with definite local strangulation, or sudden complete high obstruction, such symptoms develop with great rapidity, consequently these cases come to the hospital relatively early, if at all, and at the same time are in serious condition at the time of operation. Other cases, although appearing to have complete obstruction from the outset, may take three or four days to reach an equally serious condition, and come to operation correspondingly late. From individual case reports, however, it is clear that if each particular case could come to operation sooner, operation would have stood a far better chance of success.

The most important line along which to strive for improvement, therefore, is early diagnosis. The great difficulty here lies in the absence of physical signs to confirm our suspicions of obstruction. The local tenderness, spasm, and rigidity, so helpful in the diagnosis of acute peritoneal inflammation from various organs, is ordinarily wanting. Visible peristalsis is only present as an exception in acute obstruction, although noted somewhat more frequently when obstruction develops shortly after operation. A tumor due to strangulated coils of bowel (Wahl's sign) was observed only twice. Distention may develop late, or be absent. Temperature is often normal or subnormal. Frequently however, there is a marked leucocytosis. Except in the cases of intussusception in infants, in whom bleeding from the rectum and a palpable tumor are nearly always present, there is little definite to aid us. We have to fall back, therefore, on the cardinal, but somewhat indefinite symptoms of pain, vomiting, and obstipation. Pain is a practically constant symptom in these cases. Its location and character are variable. It is frequently umbilical or general, sometimes epigastric, or may be assigned to some other definite location. It is frequently cramp-like or continuous with paroxysms. If strangulation of the bowel has occurred, it is intense. It is not relieved by enemata, and is usually intensified by cathartics. Accompanying the pain in almost all cases is vomiting, at first stomach contents, later the characteristic thin brown foul contents of the small intestine. Enemata at the onset may give good results, from evacuating the bowel below the point of obstruction, but do not help the pain. Further enemata are without result. The pain continues unless obscured by morphia.

Pain of this character, accompanied by vomiting, unrelieved by enemata or a reasonable cathartic, should suggest the necessity for operation, or at least for surgical observation. Further attempts to force a passage by catharsis lead to increased vomiting, to overdistention and exhaustion of the bowel and to increased toxemia. The clinical picture of a deeply toxic patient with distended abdomen, feeble pulse, sunken eyes and a brown, dry tongue, is a picture of a patient when operative treatment is of doubtful benefit. The change from a patient who seems in fair condition to one in a state where operation is hopeless, takes place with extreme rapidity. These patients are far worse operative risks than their general condition would suggest. If we wait until the patient's general condition shows the effect of obstruction, the favorable time for operation has passed. In going over this series, I was struck with the rarity of negative exploration for obstruction. In a condition from which barely half of the afflicted survive, to get the best results we should have a considerable percentage of negative explorations. Operation should be based on suspicion, rather than on certainty.

If operation is decided on, the first question is anesthesia. The effect of ether is bad in intestinal obstruction. It not only paralyzes intestinal activity and so interferes with the bowel taking up its peristaltic action after operation, but may lead to inhalation pneumonia. The foul vomitus which distends the stomach may flow back through the relaxed cardiac orifice, although the patient may not actually vomit. Even if the stomach is washed out before anesthesia, it is apt to refill from the intestine during operation. In spite of its disadvantages, for practical reasons, ether, often with preliminary nitrous oxide, was the usual anesthetic in this series. The great value of local and spinal anesthesia in obstruction is shown in the results obtained in strangulated hernia, which offers a better opportunity for their use. Local anesthesia may not give satisfactory opportunity for exploration, and it is unfortunate that the field is not larger in internal obstruction. Gas oxygen was tried too little in this series to draw any conclusion as to its value as ordinarily given. It has the disadvantage in many cases of incomplete relaxation and consequent difficulty in exploration and manipulation. Aside from the uncertainty and danger of giving spinal anesthesia high enough to anesthetize the abdominal wall, it has so many definite advantages that its further use would seem advisable. The number of cases in which it was used in this series is too few to draw conclusions from, however. The results from spinal anesthesia compare very favorably with the cases in which ether was used.

The large amount of splendid experimental work done on intestinal obstruction has given us light on the cause of death in this condition. Death has been shown to be due to a toxemia. Peritonitis and sepsis, although frequently developing in obstruction are accessory rather than essential factors in the fatal outcome. Whether toxemia is due to bacterial activity, as believed by Murphy and Vincent,[3] Murphy and Brooks,[4] Dragstedt et al,[5] or whether it is due to a toxin, a primary proteose, produced by perverted activity of the mucosa of the upper intestinal tract, as believed by Whipple and his co-workers, [6, 7, 8] is not definitely determined, although the evidence appears to favor the former view. Both groups of investigators agree that the toxin is not absorbed by the normal mucosa, although Dragstedt[5] feels that this protective action is not absolute. Hartwell, Hoguet, and Beekman[9] state that there are two factors at work in producing the symptoms, and causing death in this condition, loss of water from the tissues due to excessive drain into the bowel and entrance into the circulation of poisonous material which occurs only when the mucosa of the bowel is damaged. This damage results largely from the trauma inflicted by the over-distention acting on the circulation, but possibly also from chemical action of digestive ferments stagnated above the obstruction. Such a damage having resulted, there occurs a bacterial invasion with a death of tissue cells, and in this process the poisonous substances are absorbed. Murphy and Brooks[4] believe that interference with the circulation of the obstructed intestine is an essential factor in allowing abnormal absorption, and that in the production of symptoms, the factors which make this absorption possible are more important than the factors which produce the toxin. Dragstedt et al[5] conclude that the substances responsible for the toxemia are produced by the action of the intestinal bacteria or proteins or their split products. An injury to the intestinal mucosa, particularly that resulting from disturbances of the blood supply to the intestines, greatly facilitates the absorption of these poisons. From the above views we may conclude since the normal mucosa serves as a barrier to the toxins within the bowel lumen, that absorption takes place either because the poison is formed within the mucous membrane, as believed by Whipple and his co-workers, or on account of damage to the intestinal mucosa, which permits the toxins to enter the circulation directly.

It is difficult to apply the results obtained in experimental work to the treatment of the individual case. Attempts to produce immunity by injection of the poison into animals have not led to a clinical method of treatment. Although experimentally it may be advisable to remove damaged intestine to avoid absorption of toxin by it, yet the results of resection are so bad in practice that it is indicated as a rule only to avoid the danger of necrosis or perforation. If the bowel is viable, it should not be resected without the clearest indications. If there is doubt as to the ability of affected segment to pass on the intestinal contents, or if there has been much damage to the intestine above the obstruction from overdistention, an enterostomy should be done. There need be no fear that relief of obstruction by permitting the accumulated contents of the bowel above the point of obstruction to pass into the normal bowel below will result in toxic absorption. The particular method of dealing with a given case presents perhaps as great a test of skill and judgment as any that occurs in acute surgery. The type of operation employed depends on many factors, particularly the type of obstruction, the circulation of the bowel and the condition of the patient. Whether to relieve the obstruction only, to relieve the obstruction and add an enterostomy for drainage, or to drain the bowel under local anesthesia; where resection is necessary, and whether anastomosis should be added to resection, must all be decided on the merits of a given case. The importance of the presence of bloody serum in the peritoneal cavity as a sign of probable strangulation has already been noted.

E. A. Codman's[10] remarkable results in a recent series of cases of obstruction has brought up again the question of evacuation of the bowel above the obstruction by use of Monk's or Moynihan's tube. In this series Monk's tube was noted as used in only four cases, and not since 1912. Of these cases two recovered and two died. The general opinion of the surgeons operating on this series appears to be that the damage done by eviscerating the patient, and handling the distended bowel in order to thread it on the tube, outweighs the advantage gained by emptying the contents. On theoretical grounds, on account of the difficulty with which the toxin is absorbed from the lumen of the bowel, any benefit would appear to be due more to the relief of tension and congestion than to elimination of the poisons except in such cases as show damage to the gut. The great question, in the average case, provided that the shock of the operation is withstood, is whether peristaltic activity will come back. In many fatal cases peristalsis apparently stops after operation. Maintaining the peristaltic power of the bowel and avoiding shock by all means possible, by the type and briefness of anesthesia, by absence of evisceration and cooling of the intestine, and by gentleness and care in the necessary manipulation in the abdomen, are of extreme importance. Whether the advantage to be gained by the use of Monk's tube outweighs these factors is a point still to be determined.

The great value of the injection of fluids in prolonging the life of dogs with experimental obstruction has been shown by Hartwell and Hoguet.[11] Patients with obstruction are dehydrated by diminished absorption of fluids, and in many cases, by great loss of fluids in vomitus. The replacement of this loss, by subcutaneous injection, in larger amounts than we are ordinarily accustomed to use, is of extreme importance as a preliminary to operation and in after-treatment, and serves both to refill the tissues and circulation, and to dilute the toxemia.

We may conclude, from a comparison of the results of the two series of cases of intestinal obstruction, that the period during the second ten years shows a slight but definite advance in the treatment of this condition. In spite of this, the results of operative treatment remain far from satisfactory. Nor is there suggested, from the study of these cases or from the experimental evidence, any radical means of improving the results. From the nature of the condition, the results of treatment of late intestinal obstruction are likely to remain bad, in the absence of revolutionary advances in surgical knowledge. The important field for improvement in results lies in earlier diagnosis and early operation, at a stage when so difficult a problem for surgical treatment is not presented. An average duration of time from the onset of symptoms to operation of approximately three days cannot be considered satisfactory, and the chief hope for better results lies in the reduction of this period.

REFERENCES.

[1] Scudder, C. L.: Northwestern Medicine, October, 1908.
[2] BOSTON MEDICAL AND SURGICAL JOURNAL, 1920, Vol. clxxxii, p. 562.
[3] Murphy and Vincent: BOSTON MEDICAL AND SURGICAL JOURNAL, 1911, Vol. clxv, p. 684.
[4] Murphy and Brooks: Arch of Int. Med., 1915, Vol. xv, p. 392.
[5] Dragstedt, Dragstedt, McClintock, and Chase: Jour. Exp. Med., 1919, Vol. xxx, p. 109.
[6] Whipple, Stone, and Bernheim: Jour. Exp. Med., 1913, Vol. xviii, p. 307.
[7] Whipple, Stone, and Bernheim: Jour. Exp. Med., 1914, Vol. xix, p. 166.
[8] Whipple, Rodenbaugh, and Kilgore: Jour. Exp. Med., 1916, Vol. xxiii, p. 123.
[9] Hartwell, Hoguet, and Berkman: Arch. Int. Med., 1914, Vol. xiii, p. 701.
[10] Codman, E. A.: BOSTON MEDICAL AND SURGICAL JOURNAL, 1920 Vol. clxxxii, p. 420.
[11] Hartwell and Houget: Jour. A. M. A., 1912, Vol. lix, p. 81.

DISCUSSION.

DR. RALPH H. SEELYE, Springfield: I think it is rather depressing that we should have two such series presented to us with such a very high mortality. I do not mean that it is depressing on account of any failure of the surgical procedures, but I mean it in the sense that it indicates failure in early diagnosis and early operation.

The lesson that is shown in all acute abdominal emergencies is most particularly shown here to be that of the importance of early diagnosis and early operation. Here in this series of cases showing over 100 deaths very many of them might have been prevented by early diagnosis and early operation. It is, however, encouraging in comparing the two series of the recent ten years and the previous ten years, to note in two instances a marked increase in the recoveries. I refer particularly to the cases of volvulus, where a mortality of 75 per cent. was brought down to 25 per cent., a very marked decrease; and also to the cases of obstruction the first week after operation, early post-operative obstructions, where the mortality has been very decidedly decreased. That means much better diagnosis, and it means perhaps that we are getting over the extreme prejudice that we cannot help but have in reopening an abdomen after an operation.

It really is one of the most difficult problems of this whole subject, it seems to me,—the question as to whether and when to reopen the abdomen after an operation. These cases of obstruction coming on early after an operation are very difficult for me to determine. It is encouraging also to find this series of cases improving in mortality. These are the cases that have been watched from the beginning.

I hope we shall be more ready to interfere during early symptoms and when, as Dr. Richardson says, there is a suspicion of trouble, and not wait until there is the surety of it, because in these post-operative cases particularly the patient goes to pieces all at once. I have noticed that they frequently pass very quickly from a condition which only arouses one's suspicion of obstruction into a condition in which they are practically beyond any hope of relief by operation.

It is to be earnestly hoped that we may be able to overcome our prejudices against secondary operations and have the good judgment to bring these cases to the operating room before it is too late.

DR. PEER P. JOHNSON, Beverly: The subject of intestinal obstruction has already been so well covered in the discussion of the previous papers that there is little left to be said. The striking feature of this series reported by Dr. Richardson is the high mortality and the great number of surgeons operating. However, the mortality compares favorably with that of other series previously reported.

In 1914 Deaver and Ross reported 276 cases with a mortality of 42 per cent.; in 1915, McGlannan reported a series of 276 cases also with a mortality of 45.7 per cent; Lynch and Draper in 1918 reported 24 cases with a mortality of 25 per cent.; and Codman in his recently reported series of 41 cases had a mortality of 34 per cent. My own experience has been limited to 27 cases, in which there has been a mortality of 18½ per cent., but only three of these cases quired resection of the bowel.

The point has been made, but it cannot be too much repeated, that the hope of reduction in mortality lies in early diagnosis. In my own series of cases those dying were operated three days after onset of symptoms. One is not quite clear as to the cause of the reduction in mortality in this series of Dr. Richardson compared with the series previously reported by Dr. Scudder. It was undoubtedly due in measure to early diagnosis, improvement in operative technique as well as other factors. It was during this period that the stomach tube became an important factor in the treatment of intestinal obstruction and, to my mind, this is an important means of reducing mortality. The stomach tube should be used before operation, and after operation as frequently as indicated.

I wish to agree with the recommendation of Dr. Richardson in regard to operation under local anesthesia and the performance of enterostomy in the cases of early post-operative obstruction. Such obstructions are especially apt to occur after appendix operations with drainage, due to adhesion of one or more coils of small intestine well down in the pelvis. It requires more courage to open the belly, seize a loop of distended intestine and do an enterostomy than to search for the point of obstruction, but in the majority of cases this is all that is required. The obstruction is relieved spontaneously as the adhesions melt away and no further operation is, as a rule, required.

Dr. Jones has recommended the performance of enterostomy by the Witzell method. This is the method advised by Moynihan. The tube is enfolded in the bowel in such a way that when removed the opening is immediately closed and therefore there is no distressing leakage onto the abdominal wall and, at the same time, there is a water-tight joint which enables the distended bowel to be flushed out with large quantities of saline solution.

The only real difficulty, from an operative standpoint, comes in these late toxic cases with the bowel requiring resection. It seems to be the consensus of opinion that in all such cases the enterostomy should be done above the point of resection.

There is no doubt but that the improvement in our operative results in the future must depend almost entirely upon earlier operations as a result of earlier diagnosis, and the symptoms are as a general rule so sharply cut that there ought to be very little excuse for waiting three, four or seven days before arriving at a diagnosis. One of my cases came to operation seven days after onset, and only eight cases of the 27 were operated within 48 hours and yet, in every one of these cases, the symptoms were fairly well defined and should have aroused the suspicion within 24 hours that serious damage was going on within the abdomen.

DR. E. A. CODMAN, Boston: My name has been quoted in connection with this subject, so that it shows I have a great interest in it. I feel that we have been greatly privileged in listening to the papers this afternoon. I think Dr. Richardson's work on this paper is a real, earnest, scientific attempt to find out what is the reason that the mortality is so high in intestinal obstruction; and Dr. Scudder, ten years ago, made this same sort of an analysis. It is obvious that that mortality is too high, and as Dr. Richardson has said, it has not kept pace with the improvement in acute abdominal surgery of other kinds.

Of course we all have our reasons for this sort of thing; and as this is a scientific meeting we are here to discuss the truth about these matters. I have published a paper recently, in which I claimed a successful series of 27 cases, where all recovered from the symptoms of intestinal obstruction, that is, they were relieved of obstruction, whether they died of other causes or not. Some of these were sub-acute cases and perhaps would not be given in such a series as that Dr. Richardson has shown. They were cases where one surgeon would say, put off until tomorrow, and another surgeon might say, go ahead at once. There is a very hard line to draw between those that are and those that are not absolutely acute, because many that are sub-acute today will be acute tomorrow.

Since then I have had two more cases which were successful, one in my own hands, and one that I referred to Dr. Jones because I thought there was a cancer at the sigmoid which he could handle better than I could, so that I can quote 29 successful successive cases, and I am ready to have them investigated.

I feel that I know what is wrong with that series at the Massachusetts General Hospital, and you will find the reason written between the lines in my recent paper. The fact that most of the first 14 cases I operated on were at the Massachusetts General Hospital when I had just started in surgery, and that I lost 11 of them, illustrates the system of organization which exists today in that hospital. It is science, truth and common sense that while the seniority system holds in our hospitals, we will go on discussing the high mortality of such serious conditions as intestinal obstruction at these meetings. There are things which some of us think we should not speak of. It is not the fault of the trustees altogether; it is the fault of all of us because we do not get down to brass tacks on these things. We are the persons to see that such a series ten years from now is better. It is the chiefs of service whom we should hold responsible.

The reader says there were 23 different operators for 121 (?) cases, and you will find that some of these cases were lost by surgeons of as little experience as I had had, prior to 1904. Surgery has changed in the last twenty or thirty years, and there are many more competent men to do ordinary operations such as appendectomy, than there used to be. What we need is a system whereby the more experienced men take the responsibility of the difficult cases and thereby leave the simpler operations for the less experienced.

Dr. Lincoln Davis, Boston: I think we do want to get at the truth of this, and that is why we are discussing these things. What Dr. Codman says about the senior members of the staff operating on these cases is undoubtedly true, and it may account perhaps somewhat for an increased mortality, but I do not think it does wholly.

If I understand his cases, he says he has had twenty-four cases of acute intestinal obstruction, all successful. It seems to me that it must be a different kind of case than what we have at the Massachusetts General. I know about some of those cases and have been personally responsible for some of them, one case in particular, a new-born infant whose intestine ended at the jejunum. There were also four cases of mesenteric thrombosis, only one of which was successful. I think those cases of acute intestinal obstruction at the hospital were pretty desperate cases, and I think many of them were neglected cases, just like a case I saw as I left there today, where you almost question whether it is right to operate at all or not.

In the case of intestinal obstruction oftentimes, if you are operating for a batting average you will let it alone, but if you realize that the only chance is mechanical relief you will operate. That is another thing that tended to increase the mortality of these cases, for they were not operating for a batting average but for the benefit of the patient.

If these Massachusetts General Hospital cases are to be compared with other series of cases they must be compared case by case, and the mortality will then be found to depend, in my opinion, upon the nature of the obstruction, whether there is strangulation of the bowel or not, and on the length of time that has elapsed.

Dr. W. E. Ladd, Boston: In emphasizing what Dr. Richardson and others have said in regard to early diagnosis, with special reference to intussusception, we have found at the Children's Hospital that in the cases taken in the first twelve hours we have no mortality. In the first twenty-four hours the mortality rises up to ten per cent., and between twenty-four and thirty-six hours it goes up to about twenty-five per cent. Between thirty-six and forty-eight hours it is fifty per cent., and over forty-eight hours it is often between ninety and one hundred per cent. For this reason we depend largely for our mortality on the speed with which the diagnosis was made. Any comparison of statistics without giving the duration of the obstruction is therefore obviously valueless.

Dr. Edward R. Newton, Somerville: From the discussions it would seem that watchful waiting is the chief cause of trouble, and with the present state of surgery it is a thing for which there is no excuse or no necessity.

The minimum of danger in surgical interference in any part of the human anatomy is a warrant for exploratory operation and examination. Absolute diagnosis in these acute cases is almost an impossibility. We are too apt to go through the x-ray form of diagnosis and pass the case on, simply waiting to find out something we could very quickly have found out with less danger. We had our experience years ago with hernia strangulation. The danger was the attempt to reduce the hernia, and the danger today is the attempt to find out the cause, in 99 cases out of a hundred. The reason for the failure in these larger hospitals like the Massachusetts General Hospital, is because these cases have been brought in after they have been manipulated. Surgery is an art that we can depend upon and rely upon. We are not offering one-tenth of the danger in making an immediate exploratory operation. If we get right at these cases immediately, as we do with hernia strangulation, then we will reduce the mortality. We must educate the average physician to understand that, and we must educate our patients to understand that surgery can be depended upon. We must also educate the average practitioner that the minute he has a suspicious case he should immediately consult the authorities.

Dr. Richardson (closing): When preparing this paper, I thought of including statistics from other clinics. I did not do so for two reasons. In the first place such figures were not essential to the purpose of the paper. In the second place, figures are not comparable unless one knows what type of cases are included as acute intestinal obstruction. For instance, some series of cases include strangulated hernia or cancer of the colon; these cases would have to be left out to make such figures comparable to the present series. As far as the statistics from general hospitals are concerned, I think this series compares favorably on the whole with other institutions. It is not fair to compare results obtained in private practice, among people who demand prompt medical attention, with general hospital cases.

As to the cause for the high mortality, it seems to me that when cases come to operation at an average duration of time of three days from the onset of symptoms, as in the present series, a high mortality must be expected.

Cancer: Factors Entering into the Delay in Its Surgical Treatment.

By Channing C. Simmons, M.D., Boston,
and
Ernest M. Daland, M.D., Boston.

The following paper is based on the 519 cases of carcinoma admitted to the surgical services of the Massachusetts General Hospital during the two years from January 1, 1917, to December 31, 1918. The authors wish to express their thanks to Dr. R. B. Greenough who has taken an active interest in the results of the analysis and to whom they are indebted for many valuable suggestions.

In 1912 the Pennsylvania Medical Society appointed a committee to study the cancer problem. This committee analyzed 400 cases of cancer treated by practitioners throughout the state, and found that on the average in cases of superficial cancer the patient delayed 14 months before consulting a physician, and the physician kept the case under observation 12 months before advising operation. (Wainwright.)[1] In internal cancer the delay on the part of the physician was 13 months. In 1915 Gibson[2] analyzed 110 cases of carcinoma admitted to the New York Hospital. In 84.5% of these cases there was little or no chance of cure by operation. He also found that in at least 50% of the cases the disease was not recognized by the first physician consulted. Farr[3] analyzed 103 cases from the same clinic at a later date. He found 50% too far advanced for an attempt at operative cure when admitted to the hospital, and of these at least two-thirds had been given poor advice by their physician. The average delay from the time the patient first consulted a physician to the date of admission to the hospital was 8.7 months. Two years ago one of us (C. C. S.)[4] made a report similar to that of the Pennsylvania Commission, based on the cases of cancer of the breast and uterus observed at the Collis P. Huntington Memorial Hospital,—282 in number. This showed the delay on the part of the patient and the physician to be less in Massachusetts than in Pennsylvania and New York. The present report shows a slight improvement over that made two years ago in the two classes of cases in which the figures can be compared although the cases treated at the two hospitals come from the same community.

With the idea in view of making this report we attempted to determine the following facts in all cases of carcinoma entering the surgical wards of the Masachusetts General Hospital. First, how long the patient delayed after the first appearance of symptoms before he sought medical advice. Second, how long the physician kept the patient under observation before recommending operation and whether this delay on his part was due to the impossibility of making a diagnosis, failure to make the necessary physical examination, or failure to recognize the condition when it was visible. Third, how long the patient delayed after operation was advised before seeking surgical relief. The following questions were asked by the House Officers in all cases entering the hospital and the answers noted at the end of the record in red ink. The Executive Committee very kindly made this a hospital rule and the histories were gone over in the record room and the House Officer called to account if the facts were not filled in. It is needless to say that a certain number of cases did get by but in a large majority the questions were answered. The following were the four questions asked:

1. Date of onset and character of the first symptom of the disease.
2. Date of the first consultation.
3. Date on which operation was advised and by whom
4. Date of admission to the hospital.

The results are tabulated in Table I.

The data collected also show the relative frequency of the occurrence of carcinoma in the various organs. While there were but few cases of carcinoma of certain regions among those admitted to the hospital, the numbers occurring in the organs more frequently affected are sufficient to allow safe conclusions to be drawn. It will be noted that the figures in many of the groups in the tables do not balance; this is due to two causes. A delay of two weeks in an individual case was considered as no delay as it is impossible for a patient to make arrangements for an operation in much less time after one is advised. A physician must also necessarily have a short time to study every case. The second reason is that all the data were not available in every case. If one question was not satisfactorily answered in a given case the case was not thrown out except as regards that question.

The surgical services consist of the general surgical service, which cares for the gynecological cases, the nose and throat and the genito-urinary service. The medical services were not included as few cases of carcinoma are admitted to the medical wards and these, unless obviously inoperable, are transferred to the surgical services.

Age. The average age of the 519 patients was 52.9 years which is approximately the age given by most authorities. Carcinoma of the breast and cervix were seen at a somewhat earlier age, corresponding to the time of the menopause, while carcinoma of the buccal mucosa, prostate and skin were seen later in life. It must be understood that this was the average age only and that the disease, although more common between fifty and sixty may be seen at any time of life. The youngest patient was 14, the oldest 83, and there are instances of carcinoma occurring under thirty in many of the larger groups of cases.

Sex. Males, 288. Females, 231. This proportion is rather unusual as statistics give the disease as more prevalent in the female. It is probably due to the fact that although the Massachusetts General Hospital is a general hospital, it does not treat proportionately as many cases of carcinoma of the female genitals as a hospital having a strictly gynecological service. It is also probable that many cases of carcinoma of the breast are operated upon at the smaller hospitals by their own physicians while these same hospitals are not so well equipped to care for cases of cancer of the stomach, prostate, bladder or buccal mucosa, all of which types are more common in the male.

Duration. The duration of the disease from the initial symptom to the patient's admission to the hospital was noted as an index of the rapidity of the growth in the various organs. The average duration of the total number of cases was 12.49 months. In groups of cases where the growth was visible from its inception, as in cancer of the skin, lip, or tongue, the figures are accurate. In cancer situated internally, such as cancer of the stomach or intestine, they are less accurate, as the growth was often symptomless until well advanced. The figures do show, however, that the rapidity of the growth varies greatly in different regions, and what might be termed a short duration in cancer of the breast is long in cancer of the tongue. In the latter situation the tumor is often beyond hope of cure by radical operation in two months or less.

Duration to First Consultation. The average duration of the disease from the onset of symptoms to the first consultation with a physician was 5.4 months. This is a very much better showing than is given in the report of the Pennsylvania Commission, the delay in that series being 14 months. The delay varied greatly in carcinoma of the various regions and also within wide limits in all groups. Rapidity of growth was the chief reason leading the patient to consult a physician. In cancer of the buccal mucosa, a rapidly growing type, the average delay was a little over two months, while in cancer of the prostate it was 10 months, in the breast 11.4 months, and of the skin, a very slow growing variety, 11.6 months.

There seemed to be little relation between the delay and the character of the first symptom. The classical answer in cases of cancer of the breast when the patient was asked why she did nothing about it until the tumor had obtained considerable size, was "but it did not pain." In cancer of other organs in which pain was the first symptom the patient delayed almost equally as long.

In carcinoma of the prostate the delay was 10 months although in every instance the patient suffered distinct inconvenience such as pain, frequency, retention or hematuria. Cases in which the first symptom was hemorrhage or a bloody discharge consulted the physician somewhat more promptly than the average. This did not apply to cancer of the uterus but did to cancer of the stomach, oesophagus, genito-urinary tract and rectum. Why a woman who develops a bloody vaginal discharge some years after the menopause does not seek medical advice promptly it is difficult to say. In cancer of the rectum the average delay to the first consultation was 8.1 months, but when hemorrhage was the first symptom it was 4.3 months (Table V).

The first symptom was tumor or ulcer in 36% of the cases, pain in 25%, what may be termed symptoms peculiar to the organ in 18%, and miscellaneous in 21%. The proportion of tumors is large, as such a relatively large num- of the cases were cancer of the breast or buccal mucosa, in which position tumor is the first symptom. In studying the cases further it would seem that there were few symptoms due to the disease itself, but that they were as a rule dependent upon the organ attacked. Thus tumor was usually the first symptom in cancer of the breast, ulcer in cancer of the mouth, pain in cancer of the stomach, dysphagia in cancer of the oesophagus, etc. No rule can therefore be given to the laity or to the physician as to the first symptom of cancer although it should not be difficult to educate the public to observe the first symptom in the organs commonly affected. This would materially lessen the number of cases now hopeless as regards operative cure when first seen. Carcinoma in certain regions may be symptomless until far advanced.

This is particularly true in cancer of the stomach or intestines in which the first symptom may be obstruction. This is especially unfortunate as in intestinal carcinoma metastases are formed late, and if the case is seen early the chance of cure by radical operation should be good.

In many instances the first symptoms of cancer were similar to those of a nonmalignant disease of the same organ, and in this case the patient can only be urged to consult a physician for any symptoms. The physician, however, should recognize that, while abdominal pain may be due to an error in diet, if persistent it may denote cancer, and that a slow increase in the size of the abdomen may be due to a slow-growing ovarian cyst and not an increase in the subcutaneous fat. In other words the possibility of cancer must be considered in every case.

Delay from the first consultation to operation advised. The average delay in all cases on the part of the physician from the time the patient first consulted him to the time operation was advised was three months. This varied greatly with the position, and the type and rapidity of the growth and the average for cancer in general cannot be applied to cancer of a special organ. In studying the individual cases it is evident that the greater number of physicians suspected or recognized the condition promptly and sent the patient to the hospital for study or for operation. A few did not. In cancer of the breast there was practically no delay. The tumor is easily recognized, the operation not difficult, and there is practically no other treatment for any tumor of the breast. In cancer of the buccal mucosa the average delay was two months which, considering the rapidity of the growth, is long. This suggests lack of appreciation of the fact that a painless ulcer of the tongue is almost invariably cancer and is at one time a purely local condition. In certain cases it was apparently not appreciated that flowing coming on several years after the menopause almost always denotes cancer of the uterus and that the case should be considered as one of malignant disease until proved otherwise. It is manifestly impossible to have x-ray studies of the intestinal tract made at the first visit in every case of indigestion and yet this is the only method by which cancer of the stomach or intestines can be diagnosed in its early stages. It would seem, however, that this should be advised early in cases that do not respond at once to treatment.

As examples of the few cases of failure to make a diagnosis through negligence we can cite failure to make a digital examination in all cases of bleeding from the rectum or vagina, or failure to make a laryngoscopic examination in cases complaining of persistent difficulty in phonation.

It seems fair to say on the strength of these figures that although most physicians recognize the condition and advise operation promptly, there is a longer delay on the part of a few than is justifiable. Either the possibility of cancer is not considered in a given case, or the importance of early surgical intervention is not appreciated.

Delay operation advised to operation. The

Table I.

	No. Cases	Duration	Delay to 1st Consult.	Delay to Oprn. Adv.	Delay Oprn. Adv. to Oprn.	Radical Oprn.	Deaths	Other Oprns.
Tongue	21	4.3 mos.	1.7 mos.	0.9 mos.	0.7 mos.	9	0	5
Lower jaw	10	4.3 mos.	2.0 mos.	3.0 mos.	0.3 mos.	4	0	3
Upper jaw	5	9.0 mos.	4.0 mos.	4.0 mos.	0.0 mos.	3	0	0
Cheek (inside)	7	6.3 mos.	3.2 mos.	1.1 mos	0.0 mos.	2	0	1
Lip	35	11.9 mos.	7.9 mos.	2.0 mos.	1.2 mos.	28	2	5
Esophagus	17	5.3 mos.	2.0 mos.	1.0 mos.	0.0 mos.	0	0	16
Stomach	82	8.8 mos.	3.8 mos.	6.4 mos.	0.8 mos.	12	7	56
Intestines	33	9.4 mos.	4.7 mos.	5.4 mos.	0.0 mos.	8	4	21
Rectum	44	12.3 mos.	8.4 mos.	5.3 mos.	0.7 mos.	20	8	16
Breast	79	11.4 mos.	8.4 mos.	0.5 mos.	0.5 mos.	63	2	12
Body uterus	8	13.0 mos.	6.4 mos.	4.8 mos.	0.0 mos.	5	1	2
Cervix	51	7.6 mos.	4.4 mos.	1.6 mos.	1.5 mos.	24	3	20
Prostate	25	15.0 mos.	10.0 mos.	3.0 mos.	1.2 mos.	12	5	9
Bladder	27	25.1 mos.	13.0 mos.	3.4 mos.	1.2 mos.	6	1	14
Penis	5	2.8 mos.	1.5 mos.	3.4 mos.	0.4 mos.	3	0	2
Larynx	12	14.0 mos.	11.0 mos.	2.0 mos.	2.0 mos.	4	2	5
Skin	26	21.3 mos.	11.4 mos.	7.0 mos.	5.8 mos.	21	0	3
Miscellaneous	34	7.6 mos.	3.1 mos.	1.1 mos.	1.0 mos.	7	0	24
Totals	519	12.49 mos.	5.4 mos	3.0 mos.	0.76 mos	231	35 (15%)	212

average delay on the part of the patient after operation was advised until it was performed was three weeks. This is practically no delay. Nearly all patients apparently accepted the advice of the physician and made arrangements for operations at once. The average was brought up to three weeks by a few cases who delayed a long time, and by cases in certain groups, as cancer of the prostate or skin, in which the delay was 2 and 5.8 months, respectively. Some of the delay is probably due to the fact that in cancer of certain organs much preliminary work is necessary before the patient is in condition to undergo the operation. But nine patients refused operation when it was advised. It may be said, therefore, that patients in this community accept the physician's advice in regard to operation, and that there is practically no delay on their part after the advice is given.

Operation. It is discouraging to find a small number of cases suitable for an attempt at cure by a radical operation when admitted to the hospital, but this again varied as to the type and position of the growth. The percentage would be smaller if all cases applying were admitted to the wards as many are seen in the Out-Patient Department and if frankly inoperable are referred back to their physician or to other institutions. In no case of carcinoma of the oesophagus was a radical operation attempted (17 cases), but in carcinoma of the breast a radical operation was performed in many instances in which the chance of cure was remote. The figures in the other groups varied between these two extremes.

Of all the cases admitted to the hospital less than one-half (44.5%) were considered suitable for an attempt at cure by a radical operation and in these cases there was an operative mortality of 15% confined chiefly to operations upon the intestinal and genito-urinary tracts. In 28% of the cases no operation was performed or exploration only, while in 27% a palliative operation, such as gastro-enterostomy, cauterization of the cervix, or tracheotomy was done. The operative mortality following these palliative procedures was nearly as great, 14.5%, as in those cases in which a radical cure was attempted, but in this second group the patient was often in poor physical condition and the operation was not one of choice (Table II).

This mortality seems extremely high particularly in those cases in which a laparotomy was performed. It must be understood, however, that many of the patients were in poor physical condition. It was also obvious in reading the records that the surgeons did not consider their own mortality statistics but in nearly every instance gave the patient the benefit of the doubt and, knowing what the outcome would be without surgical intervention, performed a radical operation in many cases of advanced carcinoma and on many patients who were poor operative risks.

TABLE II. OPERATIONS

	CASES	DEATHS
Radical	231 (44.5%)	35 (15%)
Palliative	139 (27%)	20 (14.5%)
Exploratory	73	4 (5.4%)
None	76	4 (5.2%)

TABLE III. MORTALITY.

(Radical Operations.)

	CASES	DEATHS	PER CENT.
Mouth, jaw, etc.	49	2	4.1%
Laparotomies	71	23	32.0%
Genito-urinary	22	6	27.0%
Miscellaneous	89	4	4.5%

TABLE IV. CAUSES OF DEATH FOLLOWING OPERATIONS.

General peritonitis	20*
Shock	14
Pneumonia, etc.	7
Sepsis	4
Pulmonary embolism	3†
Uremia	1
Hemorrhage	1
Diabetes	1
Pyonephrosis	1
"Cardiac"	3
Intestinal obstruction	2
No operation	4

* In 167 laparotomies, 12%.
† Breast, rectum, cervix, 449 ops., .66%.

TABLE V. FIRST SYMPTOMS.

(Much condensed.)

Tumor	107
Ulcer	78
Pain	128
Bleeding	70
Discharge	9
Phlebitis	1
Vomiting	12
Loss weight, etc.	11
Deformity	1
Symptoms peculiar to organ	96
Undetermined	6

A much better idea of the operative mortality can be obtained if the cases are considered in groups. Thus in cancer of the buccal cavity and lip, a group of 49 operations, the mortality was 4%, which is low considering the extent of many of the operations on the tongue and jaw. In cancer of the abdominal cavity in which a laparotomy was performed the mortality was 32% and in cancer of the genito-urinary tract 27%. In operations for cancer of other organs, breast, uterus, larynx, skin, etc., the mortality was 4.5% (Table III).

Taking into consideration the operative mortality the expectation of operative cure of cases of carcinoma entering a general hospital is strikingly small. Of the entire group 37.7% of the cases entering the hospital survived a radical operation and it is this 37.7% upon which statistics in regard to the operative cure of cancer are ordinarily based. The percentage of cures varies greatly in carcinoma of different regions but it seems fair to say that not over 25% of cases subjected to a radical operation are cured, which corresponds to 9.4% of all cases admitted to the hospital. It must always be borne in mind that these figures are based on consecutive, not selected cases. Considering the cases in groups the expectation of operative cure in consecutive cases entering a general hospital is as follows: Carcinoma of the buccal cavity (if 16% of all cases surviving a radical operation are cured) 10%. Carcinoma of the cervix (if 25% of the cases are cured) 8.7%. Carcinoma of the rectum (if 20% of the cases are cured) 5.4%. Carcinoma of the stomach (if 20% of the cases operated upon are cured) 1.2%.

The chief cause of death in all cases operated upon was sepsis in some form. Thus in 167 laparotomies there were 20 deaths, 12%, from general peritonitis. Fourteen died from shock, and seven from post-operative pneumonia. There were three deaths from pulmonary embolism in 449 operations, an operative mortality from this cause of .66%. The embolism occurred after radical operations for cancer of the uterus, breast, and rectum. Other causes of death were intestinal obstruction, pyonephrosis, uraemia, diabetes, etc.

Heredity. In studying the cases the family histories were read to determine the relation of heredity to cancer. The facts were noted in the records in 403 cases, of which 46, 11.4%, gave a history of cancer occurring in the immediate family. The fact that no case of cancer had occurred in the family was stated in 357 cases. Considering the frequency of cancer in adults over forty, a family history of the disease in 11.4% of the cases is not large and suggests that heredity as a predisposing factor is of little moment.

CONCLUSIONS.

1. The symptoms of cancer are dependent on the organ attacked. There are few symptoms characteristic of the disease itself in its early stages.

2. The rapidity of the growth varies within wide limits in the organs attacked and what may be termed long duration in cancer in one situation is short in another.

3. The average duration of the disease in all cases on their admission to a hospital is 12.49 months. The duration may be divided into three periods,—the length of time from the first appearance of symptoms to the first consultation with a physician, representing delay on the part of the patient. 2, The time from the first consultation with a physician until an operation is advised, representing delay on the part of the physician. 3, The time elapsed after the advice for operation is given until the patient enters the hospital, representing a second period of delay on the part of the patient.

4. The delay on the part of the patient after the onset of symptoms before seeking medical advice is 5.4 months. It varies considerably as to the situation of the tumor and the rapidity of its growth, but has little relation to the character of the first symptom.

5. The average delay on the part of the physician before advising operation is three months. The great majority of physicians in this community recognize the condition and advise operation promptly. The delay in carcinoma of certain regions is longer than is justifiable, however.

6. There is practically no delay on the part of the patient after operation is advised. The advice is accepted and arrangements made for operation at once.

7. In only 44.5% of the cases of cancer admitted to a general hospital is there any hope of cure by a radical operation. The operative mortality in these cases is 15%, sepsis, shock, and pneumonia being the chief causes of death in the order named.

REFERENCES.

[1] New York Med. Jour., Dec. 9, 1911.
[2] Am. Jour. of Surg., October, 1915.
[3] Am. Jour. of Med. Sci., Vol. clxxxiv, p. 34, 1919.
[4] BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. clxxix, p. 639, 1918.

DISCUSSION.

DR. EDWARD REYNOLDS, Boston. This paper drives home satisfactorily the most important nail in the subject of cancer. The cause of the enormous mortality, and of the still more important suffering, from the malignant diseases is in the majority of cases directly traceable to delay either on the part of the patient or the physician. The difficulty in teaching the public to come earlier is, as Dr. Simmons has shown clearly, the fact that there are no symptoms of cancer as cancer, but that there are the symptoms of a new growth in the organ and dependent upon the organ it attacks. Nevertheless, it is comparatively easy to teach the public the leading symptoms which should be watched for, in each of the common organs, and thus bring them to the physician in the early stage. I think it is true that in this locality a large proportion of the profession are recognizing the curable stages of cancer, and this is due largely to the campaign that has been waged. It is not true of the country as a whole.

Apparently the worst delay is largely due to the undoubted fact that, with the exception of a few very recent graduates, the whole profession has been carefully educated to a differential diagnosis between the benign and malignant new growths. We were all taught that certain signs and symptoms were essential to a diagnosis of cancer. It is pretty hard for us to reverse and realize that the classical diagnosis of cancer is only the diagnosis of incurable cancer. I recall the dictum which the late Maurice Richardson quoted so often, and for which he was at first criticized, "*Ubi tumor, ibi incisio.*" "Where you find a new growth get it out," is almost in itself the dictum of surgical authority today. It is certainly a fact that all neoplasms of doubtful character should be regarded as potential malignancies, and operated on when they are detected, and not after delay. Of course we must modify the statement a little in certain situations, especially in operations of the digestive tract where the operations are necessarily so mutilating and severe that we must often wait a little, but in the ordinary situations no neoplasms of doubtful character should be allowed to remain.

"*Ubi tumor, ibi incisio;*" when the profession as a whole has been educated to that we shall cut the mortality of cancer, and not until then.

Dr. Philemon E. Truesdale, Fall River: These records as given by Dr. Simmons are extremely valuable and very timely, because they point out the weak places in the chain of factors which are causing the delay in operations for cancer. These must be strengthened before we can expect to have cancer patients referred for operation in the curable stage. When the delay is the fault of the patient, it is usually because the diagnosis is not made or, when made, the patient does not care to be operated upon. I must say that this interval of three weeks which is recorded here would not apply generally. I think it is much longer. As a rule the patients go home and think about the operation for some time before they are willing to submit to it. You will now and then hear a patient say, "I had just as soon die from cancer as from the operation." There seems to be this fear of surgery and the impression that surgery does not cure cancer. These impressions are due to the fact that the results of failure become common knowledge and the report of success reaches only a limited number of people. The individual should be impressed with the fact that surgery, when undertaken at the very onset of the disease, offers a good hope of cure. When that point is not driven home at the start there are a great many cases where the interval between the time when the patient knows the condition to be cancer and the time of the operation is much longer than three weeks.

Where the fault of delay is due to the physician it is not always because he has not made a diagnosis but because some doubt exists in his own mind as to the accuracy of the diagnosis; therefore he wants time for observation and study. If prolonged, this is apt to lull the patient into a period of inoperability; yet occasionally it is unavoidable. In the treatment of cancer of the tongue and cancer of the breast, with manifestations of the disease plainly apparent, there is no excuse for delay, but in cases of cancer of the stomach it is a different story. There the disease is often very insidious and may be obscure until inoperable. It happens often that cancer develops in other regions of the stomach than at the pylorus, such as on the lesser curvature or at the fundus. In these regions it may be obviously inoperable when discovered, yet nobody could prove that cancer existed, nor had the patient suffered severely from its presence. It is well to remember that there are other diseases than cancer of the stomach which produce practically the same clinical picture. Tuberculosis of the lungs, for example, presents a general toxemia, anemia, and disturbance of gastric function not unlike that of cancer in an obscure part of the stomach. Syphilis of the stomach will produce clinical symptoms somewhat analogous to those of cancer.

When all the available means of diagnosis have been employed and there still exists a doubt as to the presence of cancer, especially within the abdominal cavity, I believe that one should urge the patient to have a surgical examination. By that I mean an examination of the abdominal viscera by a laparotomy. The expression, "surgical examination," is preferable to "exploratory laparotomy." The latter does not sound good to patients. Besides, many have charged excessive fees for exploratory laparotomies, with the incidental removal of an appendix. A surgical examination, when explained, appeals to the patient at a very reasonable procedure. For those who pay, a charge of from \$25 to \$50 is made. This puts it on the same level as an x-ray examination. One does not employ more assistants nor require more instruments nor as much time as is necessary for an x-ray examination, so that the above figures would place the procedure on the basis of an examination and not an operation, providing, of course, that some real surgical procedure was not undertaken.

Taking cancer of the stomach 30%, cancer of the uterus 11%, and cancer of the rectum 10%, we find about 50% of the cases in these three categories. These can be discovered earlier than they are at present only by more precise methods of examination. Until we have something better, surgical examinations should be used more frequently in the suspected stomach cases. Vaginal examination and pathological examinations of the tissue from suspicious areas of the cervix will reduce the number of late operations for cancer of the cervix. Rectal examination is also very important if we are on the hunt for cancer, and we really ought to be on the look out for cancer always. If cancer is constantly in our thoughts, fewer cases will escape unnoticed. If a rectal examination is made in every case involving the rectum and colon we will find cancer frequently where we are not liable to strongly suspect it.

I believe that the hope of further reduction in the mortality of cancer lies in the great influence and efforts of the American Society for the Control of Cancer. The knowledge which this society is disseminating everywhere is bringing people to the realization that all fake cures result in loss of time and money, that the allied methods of treatment, such as x-ray and radium, have a limited field of usefulness, and that surgery early applied is almost never fatal and at present is the most dependable treatment for cancer.

Dr. Ralph W. Jackson, Fall River: Dr. Truesdale, my fellow-townsman, has touched on some of the things I want to speak of. It seems to me that there is no location in which cancer is more marked by insidiousness of onset than in the rectum. Of course, as a proctologist, I see more of that sort than any other form of cancer, and am perhaps more awake to the possibilities, but I don't think that the profession at large begins to realize the early and beginning symptoms of cancer of the rectum as it should.

You can lay it down as an axiom that cancer is a possibility in a patient of cancer age whose bowels have been habitually constipated and become regular, have been regular and have become loose, or where attacks of looseness supervene on either habit, whether there be any blood or not. Remember, too, that the cancer age is not necessarily over thirty; it is sometimes under twenty. Such symptoms call for an adequate rectal examination in every instance. You may not find cancer; you usually will not; but no harm is done by the examination, while hesitation allows the growth to go on to a stage of near or complete inoperability, before the diagnosis is made.

I don't know why it is that most practitioners hate so to put their fingers into the rectum, when most of these cancers are within easy reach. It is not unusual to see patients who have traveled from doctor to doctor for perhaps one or two years, saying to them, "Doctor, I have piles," a self-made diagnosis which has been accepted without examination, and a salve or suppository ordered. Finally they get into the hands of one who is willing to make a digital examination, and he finds there growths that are already obstructive.

Further than this, attention should be called to the fact that we do not, as we should, employ all possible diagnostic means. I refer to the use of the sigmoidoscope. A cancer which is not within reach of the finger is almost without exception within reach of that instrument. Yet, how many men who graduate from medical schools know how to use the sigmoidoscope? How many know how to interpret the findings as they see pathological growths through it? The percentage is exceedingly small. I am surprised to note how many internes in our hospitals have never seen one used, and are delighed with the first demonstration.

Dr. Truesdale said that a considerable percentage of cases of cancer have been operated on for hemorrhoids first. Yes, and why? Because the operator didn't know that cancerous pathology frequently coexists with and may even be the cause of hemorrhoidal pathology. Before every operation for hemorrhoids, or other anal condition, there is an easy opportunity to make a higher examination, and it should be done as a routine. An unsuspected, but operable, growth may perhaps be diagnosed, and one avoids the chagrin of finding later that he has made a fatal oversight.

What I have said is a serious reflection on the profession's ignorance of premonitory symptoms, its hesitancy to make any examinations, and its failure to use the means which are at hand for diagnosis, and not difficult to use. It is an equally serious reflection on the medical schools for not properly teaching proctology and the use of its diagnostic implements.

Dr. R. B. Greenough, Boston: I believe this paper of Dr. Simmons and Dr. Daland is a most important contribution to the subject of cancer surgery. We all know that delay in obtaining radical surgical treatment is the most common cause of failure to cure by operation. This paper attempts to analyze the causes and the extent of this delay in a large series of cases of cancer of different organs, and to point out the situations in which further education of the public or of the practising physician will bring about the greatest improvement.

The layman must be educated to seek advice more promptly, and the physician must realize that the loss of an average of three months' time in arriving at a diagnosis is too long to permit the best results when surgical consultation is at last advised. The fact that the patient does not delay for any considerable time after an operation is once advised indicates that he has faith in the judgment of his physician.

It behooves us, therefore, as physicians, to see that the patient's confidence in us is not misplaced. If we are to secure to the patient his best opportunity for cure we must cut this period of three months to one of two or three weeks, at the very longest, and if we, ourselves, are unable to arrive at a diagnosis in that time we must seek assistance where it may be available, or advise an exploratory operation.

DR. PIERCE P. McGANN, Boston: I should like to ask Dr. Simmons what he thinks the patients should be told in these cases. Isn't the doctor who tells the patient that he has a tumor putting himself in the position of disputing the other doctor who is called later and is responsible for the operation? It is sometimes a cause of trouble to tell the patient that he has a tumor, and tell the patient's family that you know you are operating for cancer. The question is, what should the patient be told?

DR. SIMMONS (closing)—in reply to Dr. McGann: That is a difficult proposition, and how much the patient should be told depends on the individual case. It usually happens that the patient is badly frightened if told he has a cancer, unless the statement is modified, as for example, saying it is a mild type or a curable type if this is true. If the patient is intelligent it is best to tell him he has a beginning cancer. It is more the method of going at it than what is actually told.

There is one thing I should like to add and that is as to the value of a positive Wassermann reaction. In carcinoma in certain regions the fact that the Wassermann is positive should not allow us to rule out malignant disease as cancer and syphilis frequently coexist. Appropriate treatment will improve the condition but the cancer will continue to grow and the time for a radical operation is thereby allowed to pass.

Book Reviews.

The Journal of Industrial Hygiene.

The June issue of *The Journal of Industrial Hygiene* contains a number of articles of unusual interest, and in addition, comprehensive abstracts of current literature. Major A. C. Fieldner has described and illustrated by charts and photographs the use of the present army gas mask, and has offered suggestions for modifying them to meet special conditions. In his paper, "Human Health and the American Engineer," G. C. Whipple, S. B., enumerates the lessons in sanitary engineering, hygiene, medicine, and preventive medicine, which we have learned from the war, and outlines the probable development of public health administration. W. R. Hurley, M.D., has contributed an illustrated article on "Chip Fractures of Terminal Phalanges," in which he has cited histories of seven persons who had been injured in this way. An investigation of inorganic poisons, other than lead, in American industries, has been reported by Alice Hamilton, M.D. Cases of poisoning due to zinc, copper, and brass, arsenic, antimony, mercury, carbon disulphide, phosphorus, and carbon monoxide are described and their prevalence estimated. "Medical Inspection of Factory Employees," by M. A. Austin, M.D., indicates the importance of this work both to industry and to the individual.

The second part of *The Journal of Industrial Hygiene* contains abstracts of current literature, both domestic and foreign, dealing with industrial aspects of medicine, surgery, nursing, sanitation, and reconstruction.

Lice and Their Menace to Man. By LIEUT. LL. LLOYD, R.A.M.C. (T.) London: Henry Frowde, Oxford University Press, Hodder & Stoughton, Warwick Square, E. C. 1919.

During the last four years it has been proven beyond question that at least three diseases prevalent among the soldiers are directly traceable to lice. Typhus fever, relapsing fever and trench fever are all louse-borne diseases and through the ravages of these maladies the attention of the warring countries of the world has been directed toward this ancient, though in recent years comparatively unfamiliar, pest. As a sanitary measure to be pursued with diligence in the future among civilians as well as in the army, the public should be acquainted with the necessary precautions against infection by lice and the best methods of ridding communities of these disease carriers. Much information on the subject has been gathered by recent workers and a very valuable contribution to our present knowledge is contained within the pages of Lieutenant Lloyd's book. This volume is intended primarily for the general reader and explains in an interesting way the life history and habits of the louse, methods of disinfection, dissemination, and several common species. A separate chapter on Trench Fever by Major W. Byam, R.A.M.C., supplements those of the author on Typhus Fever, and Relapsing Fever. Replete with references on the subject to articles recently written, it also contains excellent illustrations and charts. The value of this little book as a helpful understanding of a most urgent sanitary problem would seem to be quite out of proportion to its size.

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THE DEVELOPMENT OF MEDICAL RESEARCH.

One hears frequently of the dependence of medicine upon science, but less often of the debts which science owes to medicine. In an address on "Medical Research" before the British Medical Association at the Cambridge meeting. Sir T. Clifford Allbutt called attention to the importance of medical research on the scientific problems of life. He states that without medicine, bacteriology and the study of the cell would have made slow progress; without the study of the cells of bacteria, of algae, of protozoa, we should know less of the secret of life than we do at present. Medicine has promoted research on organic synthesis, and conversely, on the reduction of foods into the more complex amino-acids before being re-woven into the tissues of life.

The nitrifying bacteria live on inorganic matter in the dark soil; so in the light some inorganic colloidal systems can build up formaldehyde. Medicine introduced the chemist to the domain of hormones and chalones. May we not also attribute it largely to medicine that the study of enzymes has thrown light upon the operations of catalysis which is incessantly forwarding the processes of nature? It may be that the vitamines are agents of this kind, agents which have upset our cruder calculations of nutritive values. Medicine has taught us how the lung deals with the CO_2 ions, and the kidneys with sundry other acids, and that there are other subtle causes of anoxaemia besides the cardio-pulmonary.

In solving the mystery of living "form," science and medicine alike have been baffled in discovering its determination. How constant form is maintained amid the continuous changes of our changing matter is a problem of second interest only to the enigma of the origin of life itself. A few years ago the animal was regarded merely as a diagram of incident forces; today we attach some importance, if not to moulding entities, at any rate to some phases which partake both of germ and matrix. Scientists are still concerned with the question of functional adaptation and environmental change. On the other hand, the constancy of bacterial species furnishes us reason to marvel and medicine has made numerous significant observations on the relations between microbes and body changes. Through acquired immunity we learn that cells are teachable.

In research lies the solution of the mysteries of life. Medical research must combine natural observation and artificial experiment. We have witnessed within the last half century the advance from deadhouse pathology to more refined and penetrating methods, and there are being unfolded continually more intimate methods, those of biochemistry, for instance. Research in observation watches nature; as experiment it tests events under artificial conditions of separation or isolation, and measures their phases We must first have an idea in our minds; and for this a certain kind of imagination is needed, one of general concepts rather than of concrete individualizing imagination. Henri Poincaré has said of scientific discovery that it consists of three stages: the first stage is of laborious work at the problem on all sides; the next is not one of conscious occupation with the subject but of unconscious cerebration, during which a promising hypothesis may arise unexpectedly in the mind; the third is deliberate verification and completion of form. In this way, out of an unlimited number of possible combinations and by many speculations the discoverer at length divines the true one. In medicine this has been clearly the course of surgery, which has ceased to be observational and has become almost a ritual. In promoting research into the origin of diseases, it is important to engage in scientific investigation the general practitioner, who should be able to detect diseases in their incipience. The progress of medicine must be in large part endogenous. While pathologists were working on morbid phenomena without ever seeing a sick man, Sir James Mackenzie was bringing laboratory equipment and exquisite laboratory methods to the bedside. The polygraph has proved again, as Plato said five centuries before Christ, that science consists in measurement. A more searching discipline is needed among practitioners. The laws of inheritance must be sought out first on animals, as the generations of man are too long for comprehension. We must also enter a larger field, and discover and compare the elements and phases of disease in animals and in plants. The comparative survey must cover the lowest of living to the highest. Medical research should be conducted with the knowledge that diseases are not entities nor even recurrent phases of independent events, but partial aspects of a universal series.

THE INDIGENT MIGRATORY CONSUMPTIVE PROBLEM.

In a previous issue of the Journal we commented editorially upon the inadvisability of tuberculous persons' migrating, without adequate means, from the East to middle-western states in search of health. A study made recently by the Texas Public Health Association enables us to estimate more accurately the results of this policy and the extent of this problem in the southwest. An effort has been made to determine the exact facts in the matter by investigating thoroughly a typical resort community to which consumptives migrate from various parts of the country. There is little doubt that if these migratory consumptives were placed in sanatoria they would benefit themselves physically and the state economically; when, however, they enter the state in a precarious financial condition, not only are they in danger of further injury to their health, but also they become an economic burden to the community in which they settle.

The Texas community under consideration had a population of approximately sixteen thousand people. During the year beginning September 1, 1918, to September 1, 1919, there were two hundred and eight deaths, of which eighty were caused by tuberculosis, thus giving a death rate of five hundred per one hundred thousand as compared with the estimated rate of 146.6 per one hundred thousand for the United States. From these figures it is evident that the excessive death rate from tuberculosis is caused by the great amount of migration of tuberculous people into the community. Furthermore, forty-six of those who died of tuberculosis in the community were removed to other places for burial, sixteen to other states, thereby indicating the great number of people who make the community a temporary home. Something of the cost to the community of these persons is shown by the fact that during the twelve months covered by the survey, one organization engaged in relief work spent $1,128.77 on twenty indigent tuberculous people, and over forty applied for financial aid. Of these twenty, only six could be found by the investigators; the remaining fourteen had roved to other communities. Of one hundred and ninety-three cases personally interviewed, it was found that fifty-four remained in the country less than ninety days; forty-six more stayed from three months to a year. These figures are a significant index to the roving nature of the migratory consumptive. It is evident that those consumptives who are dependent on relatives, on friends, charity, or upon limited savings or labor are in a somewhat precarious condition and that the withdrawal of support, the using up of small savings, or the loss of work might throw them upon the charity of the community. Out of one hundred and ninety-three tuberculous people, sixty-three were found to be in a precarious financial condition; of these sixty-three, fifty-six had come to the community from other cities or states.

An intelligent and extensive study of other communities is necessary before adequate statistics can be obtained to justify a request for legislation to prevent the futile wandering about of the indigent consumptive. These figures and statements of the Texas Public Health Association are, however, evidence of the fact that the roving tendency of the migratory consumptive not infrequently results in the impaired physical condition and economic status of the individual, in a burden to the community, and in danger to other people of infection from contact with tuberculous persons.

MEDICAL NOTES.

Election of Colonel Richard P. Strong to the Serbian Medical Society.—In recognition of his scientific achievements and as a mark of appreciation for his sympathy with the Serbian people, Colonel Richard P. Strong, chief medical director of the League of Red Cross Societies, has been elected an honorary member of the Serbian Medical Society.

Appointment of Dr. Jacob Sobel.—Announcement has been made of the appointment of Dr. Jacob Sobel as assistant director of the Bureau of Child Hygiene of the New York City Department of Health.

The British Medical Association.—The annual subscription rates of the British Medical Association have been increased from two to three guineas. This increase was necessary both because of the increased cost of producing the Journal and the need for adequate funds with which to carry on the progressive policy of the Association.

Preservation of Vaccine Virus.—The issue of the *Public Health Report* for July 23, 1920, emphasizes the importance of keeping vaccine virus at a low temperature. The length of time that vaccine virus may remain potent under unfavorable temperature conditions varies according to such circumstances as initial potency and reaction of medium. If it is to be depended upon, it should be kept at a degree not far above the freezing point of water, and if it can be kept below the freezing point, so much the better. The United States Pharmacopoeia, ninth decennial revision, specifies temperatures between 4.5° and 15° C. for vaccine virus; it is stated in the Public Health Report, however, that the latter figure given is in all probability higher than is desirable.

Bequests to Detroit Hospitals.—Bequests of twenty-five thousand dollars to the Children's Free Hospital and ten thousand dollars to the Harper Hospital, Detroit, were made in the will of the late Mr. James W. Walker.

Medical Education in Great Britain and America.—The following comparison of medical education in Great Britain and in this country has been made in an article published in *Nature*:

"During the last thirty years the feeling has become increasingly insistent, both in this country and in America, that certain radical reforms were needed in the methods of education in medicine. But our American colleagues have been fortunate in having the opportunity and the means for building new schools of medicine to meet the new circumstances and for making drastic changes in their methods of teaching which a variety of circumstances has hitherto prevented us from attempting in Great Britain. Now that the Rockefeller Foundation, by its magnificent generosity, has made it possible for us to embark upon the difficult sea of reform, it is particularly interesting and instructive to study the policy adopted in the more advanced schools of America during the twenty-seven years since the Johns Hopkins Medical School gave the study of medicine in America a new aim and a higher ideal. Though we are a quarter of a century behind our American colleagues in making a start, our delay has given us the advantage that we can profit by the experiments made on the other side of the Atlantic.

"It is not generally recognized here how thoroughly the leaders of medical education in America explored every possible method of education throughout the world, and how much devotion and thought they have expended on experiments to discover, by truly scientific methods, how best to employ the few years that the medical student can devote to the training for his profession. Those who want to understand something of the spirit and the high ideals that have inspired the American leaders in this great reform movement should read the account of their work and aims in the volume *Medical Research and Education*, issued by the Science Press of New York in 1913. Briefly expressed, the matters upon which chief insistence is placed are as follows: The absolute necessity of (*a*) an adequate preliminary education and a serious university training in the basal sciences, physics, chemistry, and biology, without which foundation it is impossible for the student really to profit from his training in medical science; and (*b*) a method of practical teaching in all branches of professional work, whereby the student can, as far as possible, investigate for himself the facts and theories of each subject under the direction of men who are themselves engaged in research work, and not rely mainly upon lectures and demonstrations to give him merely the *results* of other people's work. In other words, the aim of the reform is to train the student in scientific methods rather than to 'cram' him with traditional lore.

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"The great development in the science of anatomy during the last thirty years has been due mainly to the use of the microscope for the investigation of the structure of the body and for the study of embryology. British anatomy has been hampered by the lack of the facilities for teaching these vital parts of the subject, and has suffered enormously from the lack of stimulating daily contacts with them. In other countries, and especially in America, the cultivation of histology and embryology has not only made anatomy one of the most active branches of medical study and research, but also brought the work of the department into close touch with physiology, biochemistry and pathology, to the mutual benefit of all these subjects, and especially to the student who has to integrate the information acquired in the different departments. It was the radical reforms effected in the teaching of anatomy by the late Professor Franklin Mall at the Johns Hopkins Medical School in 1893 that played the chief part in starting the great revolution in medical education in America. The stimulating influence of the abolition of the methods of medieval scholasticism in anatomy and the return to the study of Nature and to the use of experiment brought about a closer coöperation with other departments and a general quickening of the students' interest in the real science of medicine."

INSTITUTE OF HYGIENE IN PARIS.—It has been announced in *The British Medical Journal* that arrangements have been made between the University of Paris and the French Government, through the Minister of Health, whereby suitable buildings in Paris are to be converted into a large institute of hygiene. It will be under the general direction of the professor of hygiene, Dr. Léon Bernard, but there will be five sections, each with its director. It will have sections of epidemiology, of social hygiene, food, of industrial hygiene, and of sanitary technology; and a series of laboratories—of bacteriology, chemistry, physics, and physiology—a museum, a library and lecture rooms. Courses of lectures of two standards will be given, the one elementary, for ordinary students of medicine, and the other advanced, for doctors proposing to specialize in hygiene. Instruction will also be given to persons employed in disinfection and as health and school visitors. It is hoped eventually to extend the opportunities for study by establishing courses for architects, engineers and statisticians. The food section will comprise three departments, the first dealing with the chemistry of foods and of adulteration, the second with the damage done by parasites and microbes, the third with the physiology of food and nutrition. An institute of hygiene on similar lines is also being established in the University of Strasbourg.

NUTRITION CLINICS IN CLEVELAND.—For the first time an intensive course of training has been given as an integral part of a public school system and in connection with an established summer school. The class for intensive work at Cleveland recently closed numbered thirty-five, while the attendance at the lectures in the general course ranged from 125 to 300.

A demonstration class was held at the Murray Hill School at which individual children were used for teaching purposes after the method of the medical clinics in the hospitals. The clinics organized at this time for instruction will be continued as a part of the activities of the department of medical work in the public schools.

A leading object of the course was to prepare a nutrition staff for organized work when the schools open in the fall. In addition to the school physicians and other workers in the locality there were present representatives from school and child helping associations as far west as Colorado and California.

Military Funerals in Honor of American Physicians.—Two military funerals were held in this country on August 16 in honor of distinguished American physicians. Major-General William Crawford Gorgas, former surgeon-general of the army, was buried with military honors at Arlington National Cemetery, after the observance of three services held at the Church of the Epiphany attended by members of the President's cabinet, members of the diplomatic corps, representatives of American and foreign scientific societies and officers of the Army and Navy. In the funeral procession, General Gorgas' horse followed closely behind the body of the deceased. As the procession entered the cemetery, a major-general's salute of fourteen guns was sounded by the guns at Fort Myer. A brief army service was conducted by the chief of the army chaplains, Colonel John T. Axton. The customary three volleys of musketry were followed by another fourteen-gun salute from Fort Myer.

The military escort consisted of two troops of cavalry, a provisional regiment from the tank corps, a battalion of infantry, two companies of engineers, one company of coast artillery troops, motor ambulance and three bands. Brig.-Gen. Grote Hutcheson commanded the escort of honor.

The honorary pall bearers were Secretary of War Baker, Gen. Peyton C. March, the chief of staff, the justices of the supreme court, chairman of the house and senate military committees, and the vestrymen of the Church of the Epiphany, of which General Gorgas was a member.

The military pall bearers were Major-Generals Tasker H. Bliss, Merritte W. Ireland, Frank McIntyre, P. C. Harris, Enoch Crowder, George Squier, Anson Mills, and William Sibert, Rear Admirals Braystead, surgeon-general of the Navy, and Cary T. Grayson, the President's physician, and Brig.-Gen. Isaac W. Little, and Walter D. McCaw, and former Surgeon Rupert Blue of the public health service.

A military funeral was observed also in honor of Dr. William W. Walcott in Natick, Massachusetts. Dr. Walcott was a captain in the Medical Corps attached to the 101st Engineers, and died in Paris soon after the signing of the armistice. Services were held at the home of Dr. Walcott in Natick. He was buried in Dellpark Cemetery, Natick.

Honorary pall bearers were Col. John F. Osborn of Boston, Lt.-Col. Porter B. Chase of Newton, Maj. Elias Field of Boston, Lt. Alexander Ellis of Boston, Lt. Frederick Howey of Boston, Robert Montgomery of Amherst, Dr. Eugene Kelley of the Department of Public Health of Boston, Dr. P. C. Bartlett of Newton, Dr. G. F. Curtis of Newton, Dr. William C. Hanson of Belmont, and Frederick Dodson of Framingham.

The active bearers were John Andrews, Henry G. Fiske and Ralph Swetland, all of Natick; Maj. Edwin Nielsen of the medical department of the 101st Engineers of Boston; Capt. Horace Z. Landon of the 101st Engineers, and Sergt. William Hutch of Marlboro, who was Dr. Walcott's orderly in service.

BOSTON AND MASSACHUSETTS.

The Adams Nervine Asylum.—The Adams Nervine Asylum, Jamaica Plain, Massachusetts, was founded by the will of Seth Adams primarily for the benefit of such indigent, debilitated, nervous people, who are not insane, as it may be expected will be materially benefited by treatment at the institution. The first patients were received in 1880. Patients must be inhabitants of Massachusetts, and may include non-indigent persons who may be in need of such care as the hospital affords upon the payment of reasonable compensation. Rooms are provided for 36 female and 13 male patients.

During the past year, 189 patients, of whom 154 were new admissions, were under treatment at the hospital. The forty-third annual report states that of these patients 36 received free treatment, while the money received from other patients amounted to about thirty-six per cent. of the expenses. Of the 156 patients discharged, 105 either had recovered or had been relieved by the treatment at the hospital. The occupation room was used by over 100 patients. Six nurses were graduated from the Training School.

The Massachusetts Hospital School.—The twelfth annual report of the trustees of the Massachusetts Hospital School at Canton, Massachusetts, describes the care and education given by that institution to the crippled and deformed children of the Commonwealth. The work of the school has been carried on successfully during the year ending November 30, 1919, within the appropriation made for that purpose. Only crippled and deformed children of Massachusetts between the ages of five and fifteen, who are mentally competent to attend the public schools, are eligible to the Massachusetts Hospital School; feeble-minded and epileptic children are not admitted. The work of the school is becoming widely known, and visitors representing organizations engaged in social welfare and education of the handicapped are received from various parts of the country. The maintenance of work in various departments has been difficult during the past year because of the impossibility of securing an adequate number of persons qualified for the care and instruction of the children. At no time during the year has there been a full complement of employes.

There were admitted to the Massachusetts Hospital School during the year 1919 eighty-one children, of whom forty-one were boys and forty were girls. The total number under treatment was 340. The average admission age was eight years and ten months. Twenty-nine, or 35.80 per cent., of the children admitted were suffering from some form of surgical tuberculosis, and twenty-three, or 28.39 per cent., came to the institution because of infantile paralysis Fifty-nine cases,—34 boys and 25 girls,—were discharged. Nineteen of these children became self-supporting and 13 either recovered or were so much improved that they were able to attend public schools in competition with normal children. The school has now a successful alumni of one hundred. As a direct result of training received at the school, the pupils who became self-supporting this year were able to enter upon the following trades: cook, machinist, printer, seamstress, messenger, clerk, poultryman, and teamster. The average age on discharge was fourteen years and one month.

The course of studies at the Massachusetts Hospital School is that of the grammar grade, the students graduating usually at the age of fifteen years. This is adequate for the majority of pupils; but as in some cases more progressive children require further instruction, it is hoped that some arrangement can be made in future, with the Boston School for Crippled Children whereby advanced courses may be given to selected graduates of the Hospital School. Physical condition determines the admission of all pupils to the school, and every effort is made, whether in or out of the classroom, to create and maintain conditions favorable to bodily recuperation and restoration. Students go to the classrooms dressed as for outdoors, and the outdoor work is carried on during the greater part of the year. The system of vocational training followed at the school follows the apprenticeship plan. Many of the social and recreational activities of the children are supervised by the Educational Department. Athletics are pursued to an extent that is surprising in view of the physical difficulties of the children: swimming, roller skating, coasting, ice skating, walking trips, and baseball are all enjoyed by the children.

The annual report states that a study of the admissions since the school was established, including a total of 857 cases, indicates that there are comparatively few crippled and deformed children mentally qualified for special care and training with a view to future self-support whose disabilities are due to hereditary, congenital, or accidental causes. This is contrary to the popular impression. The problem of the crippled child will not be solved until a remedy is sought in the prevention of the acquired diseases.

Medical-Social Work at the Boston City Hospital.—The Department of Medical-Social Work of the Boston City Hospital has issued its fifth report, covering the activities of that devise between February 1, 1919, and January 30, 1920. The regular staff of the department includes at present a director, fourteen case-workers, and two clinical workers. In addition, the Training School for Nurses and the School for Social Workers have sent, from time to time, students who have served as assistants to the social workers; there have been, also, a number of volunteers. Because of the limited staff, it is necessary to confine the medical-social work to selected groups of cases. During the past year it was found possible to organize social work in addition to the out-patient clinic already served, for two others, the ophthalmic and the aural.

Special attention has been given during 1919 to the welfare of children. A Children's Pavilion has been opened, where the greater part of the children of the hospital are cared for. For a group of children coming from various departments of the hospital a nutrition clinic was formed and is conducted under the medical oversight of the visiting physicians in the medical out-patient departments. Although this group has been small, the work accomplished directly with the children and indirectly by the instructions given by mothers, has demonstrated the value of the food clinic as a preventive measure. Work for the children in the hospital has been made more effective by the opening of two sunny wards devoted exclusively to children. An average of one hundred children have been to the surgical service each month, and about fifty to the medical. Workers in the Medical-Social Department have been able to assist in the after care of these children by securing prompt and regular attendance in the Out-Patient Department, arranging for care in convalescent homes or in their own homes, arranging for nursing care at home through district nurses making careful provision for diet when necessary, arranging for care in specialized institutions, helping to procure apparatus either through relatives or other sources and by doing family case work and receiving the coöperation of relatives, schools, churches, and relief giving agencies. Educational and recreational work has been planned for children in the wards, and efforts have been made to organize teaching classes for children obliged to remain in the hospital wards for long periods of time. Through a gift of five hundred thousand dollars it has been possible to start a children's library for the ward patients.

Until November, 1919, there was no medical-social worker in the Eye Out-Patient Department. A study of the medical records of the patients in that department showed an evident need of careful follow-up work. It was felt that all possible preventive work should be done for the children, of whom eighty-one per cent. of the group considered were in school where the eye strain was likely to be great enough to aggravate any neglected eye trouble. At least forty per cent. of the patients, 275, made but one visit to the clinic, although their condition required further attention; 50 patients did not return for refraction after "drops" had been given; 40 were myopia cases; 64 were "low vision" children and needed assistance in being admitted to sight-saving classes; and 316 records showed glasses prescribed, but there was no evidence that they had been obtained. A study of the children in the Aural Out-Patient Department revealed a similar need for a social worker there, and an effort was made to establish a personal contact with each child.

The medical-social workers have visited during the past year practically every patient in the maternity ward. Some of the problems of married maternity which have been met are convalescent care, temporary child-placing, and other home adjustments, medical treatment of other children, and legal problems. Unmarried maternity cases have involved long and intimate case work, including readjustments through marriage, child placing, placing of mother and infant, institutional care during treatment of venereal disease, legal action for the support of infants, convalescent care, and mental examination. Individual cases other than maternity cases in the gynaecological ward have been cared for as they have been referred to the medical-social department by physicians. The total number of out-patients who have been treated during the year in this department is 3,554, of whom 1,116 came for the first time. All new patients were visited by social workers.

In dealing with syphilis patients in the Skin Out-Patient Department, the social work involved establishing a personal feeling of confidence and coöperation on the part of the patient within the clinic, following up the patients, which was necessary in 80 per cent. of the cases, and social case work. The social service department continued its work during the year among medical and surgical adults, both house and out-patients, with the addition of occasional patients referred from departments where there is no definite social service organization. During the year there were 2,340 patients dealt with, for whom some form of social record was made. A total number of 4,742 visits were made to patients outside the hospital, either in their homes or to coöperating agencies and institutions.

Statistics on socially recorded work from October 1, 1914, to January 31, 1920, show that the Medical-Social Departmetnt of the Boston City Hospital has dealt with 7,338 new patients during that period of time.

WEEK'S DEATH RATE IN BOSTON.—During the week ending August 14, 1920, the number of deaths reported was 218 against 149 last year, with a rate of 15.19 against 9.75 last year. There were 48 deaths under one year of age against 31 last year.

The number of cases of principal reportable diseases were: Diphtheria, 27; scarlet fever, 19; measles, 13; whooping cough, 37; typhoid fever, 7; tuberculosis, 77.

Included in the above were the following cases of non-residents: Diphtheria, 6; scarlet fever, 4; measles, 1; whooping cough, 3; typhoid fever, 4; tuberculosis, 25.

Total deaths from these diseases were: Diphtheria, 2; measles, 2; whooping cough, 1; tuberculosis, 15.

Included in the above were the following non-residents: Whooping cough, 1; tuberculosis, 2.

INCIDENCE AND MORTALITY OF DIPHTHERIA AND SCARLET FEVER IN BOSTON.—The incidence and the decline in mortality of diphtheria and scarlet fever in Boston during the past two decades is shown by the appended table which has been sent us from the office of the Boston Commissioner of Health:

	—DIPHTHERIA—		SCARLET FEVER—	
YEAR	Cases	Deaths	Cases	Deaths
1900	4,977	587	1,710	181
1901	3,319	353	1,398	210
1902	1,986	225	1,122	87
1903	2,073	214	1,479	65
1904	2,538	206	966	39
1905	1,550	132	1,131	44
1906	2,172	152	1,341	39
1907	2,366	144	2,359	49
1908	3,197	204	2,693	104
1909	2,720	193	2,095	82
1910	2,453	158	2,081	59
1911	2,180	124	1,527	74
1912	1,539	102	1,153	32
1913	2,203	156	1,900	77
1914	2,807	169	3,535	65
1915	2,981	218	2,998	79
1916	2,407	185	1,766	39
1917	4,098	278	1,497	46
1918	2,832	217	1,126	24

FEW PRISONERS WITH TUBERCULOSIS IN MASSACHUSETTS PRISONS.—This summer, Sanford Bates, the Commissioner of the Department of Correction of the State of Massachusetts, secured the coöperation of the Department of Public Health, Division of Tuberculosis, for the purpose of examining the inmates of all the prisons in the State.

Tuberculosis experts from the four State tuberculosis sanatoria, under the direction of Dr. William J. Gallivan, Director of the Division of Tuberculosis, examined all of the inmates, 1,571 in number, in fourteen of the state and county prisons. The population of these prisons ranged from five to 510 each.

The result of this examination has just been announced and is a remarkable showing. Only seven out of the 1,571 prisoners were found to have active tuberculosis, one healed and 52 under observation. These seven active cases were transferred promptly to the Prison Hospital for treatment.

It is interesting to note that none of these active cases was found in the state institutions. They were all in the county institutions.

The inmates of the Reformatory for Women and the Bridgewater State Farm were not examined as these institutions have consumptive colonies.

The inmates in two of the Houses of Correction were not examined as it was not desired by those in charge. The balance of the Houses of Correction not mentioned in the 14, were closed.

NEW ENGLAND NOTES.

FRENCH ORPHANAGE FUND.—Contributions to the New England branch of the French Orphanage Fund have reached a total amount of $615,321.80.

Correspondence.

INTESTINAL OBSTRUCTION.

227 Beacon St., Boston,
June 16, 1920.

Mr. Editor:—

I return herewith the corrected copy of the stenographer's report of what I said in the discussion of Dr. Edward Richardson's paper on Intestinal Obstruction. The remarks are unusually accurately reported and I have made but few changes in them. Such changes as I have made are to clarify, not to alter, the meaning of what I said. My remarks provoked some discussion after the meeting (as I intended they should) and I am glad to have them printed practically unchanged, for since I have already gone on record as criticizing the method of organization at the Massachusetts General Hospital before the Massachusetts Medical Society, I wish to be clearly understood. I should greatly appreciate it if you could publish the following in the same edition in which the discussion of Dr. Richardson's paper is printed.

A WORD OF EXPLANATION.

It is probably an offense against good manners to inject into a discussion at a scientific meeting, a criticism of the method of organization of an institution. But good manners and parlor and parliamentary methods are apt to be inert and stand in the way of progress. Science is only our attempt to record what we believe to be facts. Science is recorded truth. Now we must not only have truth (recorded facts) to work with, but to attain the best results we must have scientific (truthful) methods of using our recorded facts. The truthful use of truth equals efficiency. Good manners are not incompatible, and may be defined as the kindly use of acknowledged lies. Those who have kissed the Blarney stone may be as efficient or inefficient as the rest of humanity.

Year after year at our "scientific" meetings of the Massachusetts Medical Society we go on discussing the reasons for the mortality of such groups of cases as those presented by Dr. Richardson. We have the facts presented and then discuss the operative procedures and the technical methods of dealing with the individual case. But it seems to be against the rules of the game even to mention the influence on the mortality in question, or the organization of the hospital presenting the statistics.

No more striking example could be presented than in the present instance. Intestinal obstruction is one of the gravest surgical conditions, and it is admitted that a surgeon's skill, knowledge and judgment are taxed to the utmost in dealing with it; yet the reader has stated that during a period of ten years 121 cases were operated on by *twenty-three different operators at this one hospital.* Is it not fair then, to ask whether a change in the organization might not result in improving a mortality of 41%? Does this mortality not show a weakness in the seniority system?

There are a number of legitimate arguments in defense of distributing a group of such grave cases among all the members of the staff, such as:

1. It gives each surgeon a little opportunity (about once in two years) of getting some experience in operating on this class of case, so that our community is not dependent on a few surgeons.
2. Such emergencies are apt to come in at night, and the chiefs of service cannot be expected to attend them.
3. Such opportunities are a legitimate reward for the younger surgeons, for much dreary routine work which they do.
4. There are so many other advantages of the seniority system, that an effort to select particularly competent surgeons for every class of difficult cases, would cause more loss than gain to the whole work.

These, and no doubt others, are reasonable arguments for continuing the present organization, but they do not apply to the matter under discussion—namely the causes of this particular mortality and methods whereby it may be improved.

That modern surgery is adequate to relieve intestinal obstruction in a very high percentage of cases, seems to me to be proved by my own series of 27 successive successful cases since 1904. I am convinced that the mortality in this condition should be almost nil, as it is now in appendicitis. Cases should be diagnosed and operated on successfully within 48 hours of the onset of symptoms or somebody is at fault. The patient may not call medical advice; the doctor called may not appreciate the gravity of the case and shift the burden to a surgeon; or the surgeon may attempt too much; or the Trustees of the hospital to which the patient is sent may sacrifice him to the ancient god of the Seniority System. The reader of my paper cannot fail to appreciate, that the Trustees of the Massachusetts General Hospital may be debited with my mortality of 11 out of 14 cases prior to 1904, and credited with the 27 successful cases since. They took this responsibility of offering to a young surgeon, without experience, *an opportunity*, just as they now take the responsibility of refusing my services so that they can give the same *opportunity* to other young surgeons. This being the case, why discuss at a scientific meeting, the mortality of intestinal obstruction?

Finally, let me say this for the Massachusetts General Hospital. There is not a single criticism which now or in the past I have publicly made which does not apply—usually in greater degree—to all the other general hospitals I know of. The Massachusetts General Hospital does at least come forward with the uncamouflaged facts about her results, in such papers as these of Dr. Richardson and Dr. Simmons. She does not conceal, but merely ignores, the question of her system of organization and its shortcomings. It may be best to go on for the next decade alloting a few cases to each surgeon as has been done in the past, but let us discount the influence of this factor at our "scientific" meetings. Let them frankly put the individual cases on the altar of their ancient god, for sacrifice to humanity.

Truth in the application of a scientific fact seems as important as the fact itself. I allege that science has taught us the symptoms by which we may recognize intestinal obstruction and the methods by which we may relieve this condition. All we need now is the organization to apply efficiently what we know. We need to demonstrate and diffuse this knowledge, and the hospitals are the only places where such demonstration can be made to advantage. If, in the next decade, the Trustees of the Massachusetts General Hospital allow 23 more surgeons to gain a little experience each, in the treatment of these grave emergencies, I cannot feel that the house surgeons who assist and the students who look on, will learn as much as if these operations were done by the chiefs of the service or individual members of the staff, selected to study the subject with especial care. They will learn a disregard of true medical ethics instead.

Concerning the statistics given by Dr. Richardson and those of my own paper, I should like to say that there are some points on which they are not comparable, and those points are very much in my favor.

1. I included certain subacute cases: 25, 30, 31, 35, 36.
2. I did not consider cases 16, 19, 23 as having died from intestinal obstruction.

In my opinion, Dr. Richardson should not include cases in his series which died of other causes than obstruction, for the paper is a discussion of this condition. If, for instance, a colostomy was done and later an attempt made to excise a cancer which had caused the obstruction, it cannot fairly be included in the mortality of intestinal obstruction. It belongs with the mortality of cases of intestinal resection for cancer.

E. A. Codman, M.D.

* * *

FUNERAL SERVICES OF GENERAL WILLIAM CRAWFORD GORGAS.

The following letter has been published recently in a Boston paper:

Mr. Editor:

Some of us aboard ship had been reading Owen Wister's "Straight Deal or the Ancient Grudge," and perhaps had Rude Britannia and Crude Columbia in mind on landing at Southampton, July 8th. The two young college undergraduates, chance acquaintances of the voyage, coming to England for the first time and on an English liner, had already begun to understand a little about it. One of them, to be sure, had spent 1918 in France in an observation balloon overlooking our line of battle, but he had seen nothing of the British and retained the prejudice acquired from his school histories, which began with Bunker Hill or thereabouts. They were a little uneasy when the passengers celebrated Independence Day aboard and wound up with the "Star-Spangled Banner" and forgot "God Save the King," but this was counter-balanced by the behavior of an intoxicated Englishman of the class "bounder" and by the rudeness of a group who played deck games all day to the exclusion of others and who subsequently crowded us out of our seats reserved on the boat train. It was not a particularly good beginning for these boys, and we reached London at midnight in a downpour and no hotel seemed eager to take us in.

There was a notice in the paper the next morning that there would be a funeral service at St. Paul's for General Gorgas, and as the Cathedral was on the list of things the boys were to see, and as I wished to go to the service, we met there shortly before soon. They did not quite understand why so many people were about nor why, after all, so much attention was being paid to the passing of an American who had once been a surgeon general, whatever that might be, of our Army, and who had had something or other to do with yellow fever—or was it something else?

Unquestionably, it was in the air that they had stumbled upon a notable occasion and we lingered on the steps to see. Shortly before noon, the most crowded time of day on the busiest of London thoroughfares, the traffic was switched off as by magic, and the streets cleared of people, who stood massed on the sidewalks with bared heads as the funeral cortège approached. It was a most impressive scene—a squadron of cavalry of the Life Guards followed by slow-pacing battalions of Coldstream and Irish Guards still in khaki—the coffin, covered by the American flag, on a gun carriage, flanked by high officials as pallbearers, the General's saddled charger, and then the band of the Coldstream Guards.

The body was carried under the dome, where the representatives of the royal family and an astonishing number of distinguished people had assembled. It was a simple and beautiful service read by the dean—the hymns "Nearer, My God, to Thee," "Lead, Kindly Light"—and when at the end "The Battle Hymn of the Republic" was played by the organ, accompanied by another Guards' band and sung by the assemblage, I could feel my young friends choking and swallowing.

I said good-by to them later, came to Oxford and did not see them again, but they wrote me that five days later they saw the remains of Lord Fisher of Kilverstone, admiral of the fleet, borne to Westminster for a similar ceremony. What surprised them was that the procession was no longer and only differed in being composed of marines with reversed arms instead of Guards, and that the crowds of bared people behaved in the same silent, reverent, British way when their beloved "Jacky Fisher" was carried by as we saw done five days before. I think the boys are beginning to understand.

Harvey Cushing.

Oxford, July 15, 1920.

MORTALITY OF CHILDBIRTH.

Mr. Editor:—

It does seem to me that an unfair comparison was made in your editorial of August third in regard to the considerable lower mortality of maternity patients treated by Harvard students at the Lying-in Hospital, and those treated throughout the State by the profession.

As I understand the situation, patients register at the Lying-in Hospital, are examined, the cases that are complicated by disease or those cases which promise to be hard are taken into the Hospital; those that are normal are delivered outside by the students.

The general practitioner is at a disadvantage as he must take cases without selection and, furthermore, as a rule, his cases are not so robust as the aboriginal type of patients that frequent the hospitals of the North and West Ends.

It has been shown that the mortality statistics of women delivered by midwives is very favorable compared to the statistics where physicians were the accoucheurs. There is an explanation of this condition in that as soon as a case becomes pathologic a physician is called in and, if the woman dies, the doctor signs the certificate of death, and, of course, the case is charged up to the mortality statistics of the doctors. In the same way quite a few of these student cases are passed along to the doctors. The family intervene when abnormal conditions develop and a physician is called.

In regard to the "Maternity Bill" which is to come before the Legislature next year, I believe that the great majority of the dooctors of the state are in favor of giving a maternity benefit. I believe that the doctors favor a direct money benefit to the needy woman.

I understand that the trend of the "inner circle" of the profession is to divert part of this benefit to the support of charity workers, social workers, statisticians, etc., so that in the end the act will not be much of a benefit to the parturient woman.

In the present condition of affairs, the woman without funds calls on her local doctor and pays him when she can. Practically all of them pay the doctor in time if they are able to do so. Giving a sum to the parturient woman at the time of her trouble would be a very good thing for the physician and the nurse. The woman in need would be getting nothing more than she is entitled to get.

The little extra taxation, if it were placed where it should be—where all taxation should be placed, namely, on those who are best able to pay; on those where maternity problems are few—would scarcely be felt.

I think that a direct gift to the childbearing mother, without any stipulation as to what hospital or doctor she is to employ, would be to the benefit of the woman and to the medical profession.

In passing, I will say that many of our young medical men, recently returned from the war, are in dire straits. Many of them are not making enough to sustain life. The condition of the profession is becoming intolerable in Boston, due to the flagrant abuse of the out-door clinics at the various hospitals, particularly the Peter Bent Brigham, the Massachusetts General, and the Boston Dispensary. We all know that a very large per cent. of the people who go to these clinics are perfectly able to hire physicians, yet they are encouraged in every way to patronize these clinics to the great detriment of the profession at large.

Nothing is done by the men who are elected yearly to look after the interests of the profession, and no body expects anything will be done in this line so long as the profession remains in the docile condition it is in at present.

The staffs of these hospitals are primarily to blame for the greedy, unrighteous, unfair competition waged by the hospitals against the general practitioner. The staff "leaders" having landed at the top of the ladder adopt the attitude toward the profession that Vanderbilt applied to the dear people when he said, "The public be d——d!"

To revert back to Maternity Benefits, the parturient woman would be greatly benefited. She could have competent medical and nursing care, the profession would be benefited, particularly the younger men, many of whom the hospitals are depriving of a living, and the community would be benefited by having its most useful people properly cared for at the vital time of their lives.

Charles Malone, M.D.

46 St. John St., Jamaica Plain, Mass.

The Boston Medical and Surgical Journal

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WILLIAM T. G. MORTON, THE DISCOVERER AND REVEALER OF SURGICAL ANESTHESIA: A PLEA FOR HIS PLACE IN THE HALL OF FAME.

By S. Adolphus Knopf, M.D., New York.

There still seems to be some misunderstanding among certain physicians concerning the man to whom belongs the credit of revealing and promulgating the use of sulphuric ether as a means to produce surgical anesthesia. I am therefore grateful to the Boston Medical and Surgical Journal for being willing to offer its columns once more for a somewhat detailed discussion on the subject. On April 29, the editor of this periodical was good enough to publish my open letter entitled "No Physician or Surgeon as yet in the Hall of Fame." In that communication I deplored the fact that no physician or surgeon had yet been found worthy to be named among the great American immortals. I ventured to suggest as the three most worthy names, William T. G. Morton, the discoverer of ether anesthesia; Ephraim McDowell, the first surgeon to perform a rational, deliberate, and successful ovariotomy, and J. Marion Sims, a great gynecologist who perfected the plastic operation in the vagina for the relief of vesical fistulae and invented the speculum. I stated that the nomination should be sent to the Senate of the New York University, University Heights, New York City, and that this should be done by every American physician who feels the great injustice done to the American medical profession by the apparent neglect or oversight of the previous electors.

I received many letters of approval of my humble efforts and of my choice of the three names mentioned. A few of my correspondents, however, objected to the name of William T. G. Morton as not being the discoverer of surgical anesthesia, and in the *Journal of the American Medical Association* of April 24, there appeared a strong letter signed by Dr. S. J. Lewis, according to which the priority of the discovery of sulphuric ether as an anesthetic belongs to Dr. Crawford W. Long. It would lead to no result to recall here all the details of the old controversy between Morton, Long, and Jackson of half a century ago; the fact remains that before any one of these three men thought of the subject of anesthesia, means to subdue pain by all sorts of physical agents, such as various vapors, lotions, etc., were employed, and even hypnosis was resorted to by Esdaile and Elliotson (1790-1868) who operated hundreds of patients in the hypnotic state

Granted that Crawford W. Long discovered the anesthetic properties of sulphuric ether long before Morton, he did not make known this method of producing sleep and insensibility to pain. Long did not prove to the medical profession that surgical anesthesia with the aid of sulphuric ether was "certain, safe, and complete." These words were used by Dr. Henry J. Bigelow, a member of the staff which was present during the operation on that memorable day of October 16, 1846.

Concerning the priority claims of Long and Jackson, Dr. J. Collins Warren, Moseley Professor of Surgery Emeritus, Harvard University, who wrote me only recently in reference to this matter, says: "It is probable that Long performed three or four minor operations with primary anesthetic and then abandoned his claims. As Dr. Keen says, he is deserving of nothing but censure for not having appreciated the value of the agent." Regarding the claims of Jackson and his heirs, it cannot be too strongly insisted upon that Dr. Charles T. Jackson was very unwilling to have anything to do with the discovery at first. According to a letter by a son of one of those present at the first operation, Dr. J. C. Warren, Jackson made the statement that "Morton would kill somebody next," and it was not until he had attended an operation in Dr. Warren's father's office, to which he was invited and saw Morton give the ether most successfully that Jackson came out the next day with an article in the newspaper claiming a share in the discovery. The heirs of Dr. Jackson now say that he was prevented from making the first public demonstration, that is to say, prevented from doing what Morton did at the Massachusetts General Hospital on October 16, 1846. The reason for Jackson's not doing this is given by the heirs as his being obliged to fill an important engagement to survey some mines in Maryland, but they state that he had directed Morton what to do and how to do it and assumed all responsibility. According to this, Jackson evidently thought the surveying of some mines more important than to give in person the first administration of sulphuric ether to a human being to prevent the pain and suffering which patients and surgeons had endured for centuries. Jackson's claim to have assumed all responsibility without himself administering the ether, would not have cleared Morton from guilt (homicide), had the patient not survived the experiment. Thus to Morton and not to Jackson belongs the honor of demonstrating to the world the greatest conquest of the age.

Regarding the responsibility for the result of the first demonstration of general anesthesia and the method of administering the ether, Dr. George W. Gay, Senior Surgeon of the Boston City Hospital, and ex-President of the Massachusetts Medical Society, very pertinently says:

"The man who gave the anesthetic upon the memorable occasion at the Massachusetts General Hospital was Dr. William Thomas Green Morton. He had experimented with sulphuric ether, had demonstrated its safety and efficiency and sought an opportunity to show its efficiency in general surgery. He assumed the sole responsibility of the demonstration. The results, whatever they might be, rested upon him. His enterprise, his enthusiasm and his courage brought success. Whatever suggestions or assistance he may have received from others, he was *the* man that made anesthesia a practical, every-day blessing to mankind."

It has recently been my privilege to visit the Nestor of American surgeons, the venerable Dr. Stephen Smith, a physician who began his medical career before the epoch-making revelation of general anesthesia for capital operations. Those who have the rare good fortune to see Dr. Smith today in his 98th year, will be surprised at the physical and mental vigor of this veteran. When I told him of my efforts to get recognition for Morton and to place his name in the Hall of Fame, he promised me his assistance. I begged him to give me the information in writing, and on July 30, 1920, he was good enough to send me what follows:

"Regarding your inquiry about Dr. William T. G. Morton, I am very glad to forward you a few personal reminiscences. At the time of the controversy in Congress over the question of priority in the discovery of anesthesia I was Editor of the *New York Journal of Medicine*. Dr. Morton called several times on me to discuss the situation and I had an opportunity to estimate the value of much of the evidence presented by the competitors. Dr. Morton was a man of pleasing personality, always faultlessly dressed, extremely courteous, and evidently controlled by a highly organized nervous system. It was due to his restless nervous activity that anesthesia was finally brought to a public test. His advocacy and practice of anesthesia in dentistry created a host of enemies who sought his ruin. He met them with ever-renewed instances of success and finally with the famous operation of Professor Warren on the sixteenth of October, 1846, at the Massachusetts General Hospital. Even at this operation the enemies took advantage of a slight delay in the appearance of Dr. Morton to impress the large audience of Boston's most prominent physicians and surgeons that he did not dare face a real trial of his vaunted anesthetic. It was only at the conclusion of the operation when Dr. Warren spoke these words heard around the world,—'Gentlemen, this is no humbug,'—that they were silenced."

Dr. Smith then refers me to his contribution on History of Medicine in the latest edition of the *Medical Reference Handbook* (Vol. VIII, pp. 55 and 56), published by Wm. Wood & Co., New York, and to his article on "Reminiscences of the Introduction of Anesthesia and Asepsis" in the *Johns Hopkins Hospital Bulletin* of September, 1919 (p. 273). Both of these articles contain more detailed and explicit information concerning the right of Morton's claim to priority in the matter of introducing general anesthesia by sulphuric ether.

The question resolves itself into what is meant by priority in the case of a great discovery. In Owen's "Homologies of the Skeleton" we read the following definition of priority: "He becomes the true discoverer who establishes the truth, and the sign of the truth is the general acceptance. Whoever, therefore, resumes the investigation of neglected or repudiated doctrine, elicits its true demonstration, and discovers and explains the nature of the errors which have led to its tacit or declared rejection, may certainly and confidently await the acknowledgment of his right in its discovery."

Francis Darwin in *Eugenics Review*, 1914, makes it still clearer when he says: "In science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs." Morton convinced the world; the credit is his.

The late Sir William Osler, our greatest modern medical historian, to whom I referred in my first communication, considers Morton the inventor and revealer of anesthesia by sulphuric ether, and he speaks of him as a new "Promethus who gave a gift to the world as rich as that of fire, the greatest single gift ever made to suffering humanity." He pertinently asks in one of his latest essays on the subject (*Annals of Medical History*, Vol. 1, No. 4):

> "Why do we not give the credit to Dioscorides, who described both general and local anesthesia, or to Pliny, or Apuleius, or to Hiotho, the Chinaman, who seems to be next in order, or to the inventor of the spongia somnifera, or to Master Mazzec Montagna, in Boccaccio, or to any one of the score or more of men in the Middle Ages who are known to have operated on patients made insensible by drugs or vapors?"

In addition to the testimony of Osler, that to Morton and to no one else should be given the credit, I may be permitted to copy a part of a page from the *Century Illustrated Monthly Magazine* of August, 1894, containing a personal letter from Oliver Wendell Holmes, sent to Mr. E. L. Snell on April 2, 1893:

> "This letter was written in reply to an inquiry addressed by the writer of the present article (Mr. Snell) to Dr. Oliver Wendell Holmes, who was a member of the medical staff of the Massachusetts General Hospital at the time of the discovery. Following is the full text."
>
> "Boston, April 2, 1893.
>
> "My dear Sir:—
>
> "Few persons have or had better reason than myself to assert the claim of Dr. Morton to the introduction of artificial anesthesia into surgical practice. The discovery was formally introduced to the scientific world in a paper read before the American Academy of Arts and Sciences by Dr. Henry J. Bigelow, one of the first, if not the first, of American surgeons.
>
> "On the evening before the reading of the paper containing the announcement of the discovery, Dr. Bigelow called at my office to read the paper to me. He prefaced it with a few words which could never be forgotten.
>
> "He told me that a great discovery had been made, and its genuineness demonstrated at the Massachusetts General Hospital, of which he was one of the surgeons. This was the production of insensibility to pain during surgical operations by the inhalation of a certain vapor (the same afterward shown to be that of sulphuric ether).
>
> "In a very short time, he said, this discovery would be all over Europe. He had taken a great interest in the alleged discovery, had been present at the first capital operation performed under its influence, and was from the first the adviser and supporter of Dr. W. T. G. Morton, who had induced the surgeons of the hospital to make trial of the means by which he proposed to work this new miracle.
>
> "The discovery went all over the world like a conflagration. The only question was whether Morton got advice from Dr. Charles T. Jackson, the chemist, which entitled that gentleman to a share, greater or less, in the merit of the discovery. Later it was questioned whether he did not owe his first hint to Dr. Horace Wells of Hartford, which need not be disputed.
>
> "Both these gentlemen deserve honorable mention in connection with the discovery, but I have never a moment hesitated in awarding the essential credit of the great achievement to Dr. Morton.
>
> "This priceless gift to humanity went forth from the operating theatre of the Massachusetts General Hos-

pital, and the man to whom the world owes it is Dr. William Thomas Green Morton.

"Yours very truly,
"O. W. Holmes."

As further evidence that the credit should be given to Morton, I will cite a paragraph from an address by Prof. William H. Welch, of Baltimore, delivered on October 16, 1908 (the 62nd Anniversary of Ether Day), as follows:

> "The attendant circumstances were such as to make the operation performed on October 16, 1846, in the surgical amphitheater of this hospital, by John Collins Warren, upon the patient, Gilbert Abbott, placed in the sleep of ether anesthesia by William Morton, the decisive event from which date the first convincing public demonstration of surgical anesthesia, the continuous, orderly, historical development of the subject, and the promulgation to the world of the glad tidings of this conquest of pain. Had this demonstration or any subsequent one of like nature failed of success, it is improbable that we should have heard much of claims to the prior discovery of surgical anesthesia."

In a letter dated July 29, 1920, Professor Welch heartily endorsing my efforts on behalf of William T. G. Morton, writes: "Surgical anesthesia has been America's greatest contribution to medicine and surgery and it would be a thousand pities not to have this recognized in the Hall of Fame. As only one name can be selected for this purpose, it is clear to me that this name should be Morton."

I know that no one ever devoted more time and labor to the unbiased search for the truth in this ether controversy, especially the Morton-Jackson issue, than Professor William H. Welch. Thus I sincerely hope that the documentary evidence given by Henry J. Bigelow, Oliver Wendell Holmes, S. Weir Mitchell, Stephen Smith and William H. Welch, and the opinions expressed by such men as Warren, Osler, Gay, and Keen, may suffice to settle the controversy for good and all. Having sent the evidences at my disposal to the 102 electors it was gratifying to me to receive from Prof. R. S. Woodward, the President of the Carnegie Institution of Washington, one of the electors, a most courteous letter in which among other things he says:

> "I had already seen most of the data you furnish but it will all be useful for reference in connection with the rather arduous tasks the Electors of the Hall of Fame have assumed. It is a great pity that partisanship with respect to the merits of various candidates should be pushed so hard as it is. But data such as you have furnished serve to mitigate the severity of such partisanship. The facsimile of the letter of Oliver Wendell Holmes is very convincing in respect to the case of Morton.*

Dr. Charles H. Mayo, the distinguished surgeon of Rochester, Minn., one of the electors of this year, wrote me as follows: "It is a sad commentary that no medical man's work has been considered of sufficient importance to warrant a tablet in the Hall of Fame." In some quarters objection to Morton has been raised because he having been a dentist does not really represent the medical profession. Leaving aside the fact that he studied medicine a number of years and Harvard having conferred upon Morton an honorary degree of Doctor of Medicine, should we not and do we not consider dental surgery a branch of general surgery? This, too, is the opinion of no less an authority than Prof. William H. Welch, the Dean of Johns Hopkins Medical School.

There should not be any difference of opinion as to the nomination of Morton to the Hall of Fame, and every American physician and surgeon and dental surgeon could and should be helpful in bringing about this just reward to the memory of a man to whom the whole civilized world is indebted for this gift of medicine to mankind—"the death of pain."

The electors have until October first to make their decision, so there are time and opportunity for all those interested to write to any one of the 102 electors for the Hall of Fame, or to the Senate of the New York University. By addressing a request to Mrs. William Vanamee, the Secretary and Acting Director of the Hall of Fame, 347 Madison Avenue, New York City, a list of this year's electors will be furnished.

Fortunately we have among the electors this year no less than four medical representatives,—Major General Leonard Wood, Prof. William H. Welch, and Drs. William J. and Charles H. Mayo. I hope the good and great General will forgive me for still claiming him as one of ours.

We should not only have William T. G. Morton, but also several other of our great Americans belonging to the profession of physicians and surgeons in the Hall of Fame. In my first communication on the subject I mentioned Ephraim McDowell and J. Marion Sims. From a rather voluminous correspondence resulting from my first article entitled "No Physician or Surgeon as yet in the Hall of Fame," which appeared in nearly all of the leading American medical journals during the month of April, I gather that there is also a strong desire to see the great Benjamin Rush (1745-1813), whom Roswell Park in his History of Medicine calls "the most conspicuous medical character of the century," included among America's great immortals. Rush will always be held in grateful admiration as an acute observer of diseases by American internists. His descriptions of clinical phenomena are today as classic and authoritative as when published, and of course I am glad to include the man after whom Rush Medical College is named among those of our profession who should have a place in the Hall of Fame. Lastly, there is Walter Reed, who should not be forgotten. His discovery of the mode of conveyance of yellow fever has resulted in the saving of untold thousands of lives, and it is to be hoped that his name will also soon be found among the immortals in the Hall of Fame. But however great the achievements of Rush, McDowell, Sims and Reed may be, those of Morton surpass them all. Because of his epoch-making revelation surgery was made painless, and thanks to this it has become an almost perfect art and science whereby countless lives are saved annually throughout the civilized world.

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* A fac-simile of Oliver Wendell Holmes's letter, addressed to Mr. Snell, was sent to each of the 102 electors of the Hall of Fame.

It may not be universally known that Morton died virtually in poverty and heartbroken because he had received no recognition for his epoch-making discovery and daring experiment. I feel that I cannot close this ardent appeal for justice to "the inventor and revealer of anesthetic inhalation before whom in all time surgery was agony" better than by quoting a few verses from the immortal poem, "The Birth and Death of Pain," by the late Dr. S. Weir Mitchell, read on October 16, 1896, at the Commemoration of the Fiftieth Anniversary of the First Public Demonstration of Surgical Anesthesia:

What angel bore the Christ-like gift inspired!
What love divine with noblest courage fired
One eager soul that paid in bitter tears
For the glad helping of unnumbered fears,
From the strange record of creation tore
The sentence sad, each sorrowing mother bore,
Struck from the roll of pangs one awful sum
Made pain a dream, and suffering gently dumb!

Whatever triumph still shall hold the mind,
Whatever gift shall yet enrich mankind,
Ah! here, no hour shall strike through all the years,
No hour as sweet, as when hope, doubt and fears,
'Mid deepened stillness, watched one eager brain,
With God-like will, decree the Death of Pain.
How did we thank him? Ah! no joy-bells rang,
No peans greeted, and no poet sang,
No cannon thundered, from the guarded strand,
This mighty victory to a grateful land!
We took the gift, so humbly, simply given,
And coldly selfish—left our debt to Heaven.
How shall we thank him? Hush! a gladder hour
Has struck for him, a wiser, juster power
Shall know full well how fitly to reward
The generous soul that found the world so hard.

Oh! fruitful Mother—you, whose thronging states,
Shall deal not vainly with man's changing fates,
Of freeborn thought, or war's heroic deeds,
Much have your proud hands given, but naught exceeds
This Heaven-sent answer to the cry of prayer,
This priceless gift which all mankind may share.

GASTRIC AND DUODENAL ULCERS: TYPICAL AND ATYPICAL FORMS; THE RELATIVE VALUES OF DIAGNOSTIC PROCEDURES.

By C. W. McClure, M.D., Boston,
and
L. Reynolds, M.D., Boston.

[From the Medical Clinic and the Radiographic Department of the Peter Bent Brigham Hospital, Boston.]

The symptomatology of the usual type of gastric or duodenal ulcer (peptic ulcer) is generally well known. But the atypical manifestations of peptic ulcer, although long known to exist, are not so universally recognized. Furthermore, the status of radiographic and laboratory findings as aids in diagnosis does not seem to be clearly defined in the minds of many clinicians. There is a tendency on the one hand to overvalue laboratory findings and on the other hand to misinterpret x-ray findings. This state of affairs is easily explained. Until comparatively recent years laboratory findings were the only adjunct in the diagnosis of ulcer and hence rightfully held a valuable status. But this status has become changed by the development and application of radiographic methods as an aid in the diagnosis of gastrointestinal lesions. Such a change tends to produce more or less confusion as to the diagnostic status of the different methods. In order to appreciate better and to evaluate more properly the significance of these methods as aids in diagnosis and to comprehend better their relative importance, an analysis of the records of eighty selected cases of duodenal and gastric ulcer has been made. Fifty-five diagnoses were confirmed by operation. In the remaining cases the x-ray findings or frank hematemesis made the accuracy of the diagnosis practically certain.

Forty-six of the cases occurred in men and thirty-four in women.

The age incidence is given in the following table:

1-20	0
21-30	12
31-40	18
41-50	27
51-60	16
61-70	6
78	1

Thirty-six widely different occupations were represented among the patients. The use of tea, coffee, alcohol and tobacco was not excessive in more than a very slight minority. Thus neither occupation nor habits played an apparent etiological rôle.

The duration of the symptoms could be determined in sixty-nine cases. The extremes were ten days and forty years. In eight cases symptoms had been present from ten days to nine months, in forty-two cases from one to twelve years, and in nineteen cases from fifteen to forty years.

Although no new clinical types have been discovered, a discussion of those observed will be given in order to enhance the understanding of the significance of the x-ray findings, especially in the atypical cases. Since the only accurate preoperative method of differentiating between gastric and duodenal ulcer is by means of radiographic studies, no attempt will be made to separate the manifestations of these two lesions. For purposes of discussion the symptomatology will be divided into two groups; *i. e.*, the more common typical and the less frequent atypical varieties.

TYPICAL FORM OF PEPTIC ULCER

Fifty-four cases of the typical form of peptic ulcer have been studied. In twenty-eight of these the ulcer was located in the first portion of the duodenum and in twenty it was in the stomach. In fifteen of the latter the ulcer was situated on the lesser curvature some distance above the pylorus. In six cases, in which frank hematemesis occurred, the anatomical site of the ulcer was not located by x-ray studies and the patients were not operated on.

The symptomatology of the typical form of ulcer is illustrated in the following case report.

Case No. 1. K. C. M. Med. No. 10860. White, male, car starter, aged 47. Admitted to the Peter Bent Brigham Hospital April 10, 1919, and transferred to the Surgical Service April 16, 1919.

Diagnosis: Duodenal ulcer.

The patient entered the hospital complaining of epigastric pain after meals. The past medical history was unimportant. There had been a slight loss in weight,—ten pounds.

Gastrointestinal History: The onset of gastric symptoms occurred six years prior to admission to the hospital. It was characterized by distress and sharp pain in the epigastrium, occurring regularly from one to one and a half hours after meals. The pain radiated to the dorso-lumbar region. The pain persisted for from one to two hours unless relieved by the ingestion of soda or food. Pain did not disturb the patient's sleep. Since the onset attacks similar to the one described had occurred at intervals of about every three months and persisted for two weeks at a time. There had been no vomiting, no jaundice and no bloody or tarry stools.

Physical examination, including that of the abdomen, was essentially negative.

Roentgen Report 14582. The stomach was normal in position and contour. It was slightly atonic and contained practically the entire six-hour barium residue. Peristalsis was vigorous and the waves deep. The sphincter was normal. The duodenal cap could not be completely filled and its lesser curvature side was constantly irregular. There was only a trace of the barium in the small intestine at the six-hour observation.

Interpretation: The findings are those of duodenal ulcer.

Clinical Pathology: The fasting gastric contents contained no food residue. Free HCl was 50. The benzidin test for occult blood was negative. After an Ewald test breakfast free HCl was 85 and total acidity 100. Wassermann reaction in the serum was negative. The usual examinations of the blood and urine were negative.

At operation an ulcer of the duodenum was found.

A distinguishing feature in the report of the above case is the time relation between the taking of food and the onset of epigastric pain. This feature characterizes the typical class of peptic ulcers. The epigastric pain varied greatly in severity in the different cases of this series and at times in the same case. In a small minority the pain was of the nature of mild distress, but usually it was intense enough to cause much distress, while frequently it was severe; *i. e.*, in thirty-seven of the fifty-four cases. Two other features of diagnostic importance are the occurrence of remissions and exacerbations and the relief of pain by soda or food. In this series exacerbations occurred in forty-seven of the fifty-four cases, and the pain was relieved by soda or food in fifty-one cases. The three in which such relief did not occur were cases of gastric ulcer. Night-pain was not present in the case reported but it was a disturbing feature in fourteen of the fifty-four cases of this series. Backache, in the dorso-lumbar region, was a prominent symptom in three cases. In one of these it was the patient's chief complaint, and in another it had led to studies for the determination of possible renal calculi.

Hematemesis had occurred, sometime during the course of the disease, in eleven cases and tarry stools in ten. In the cases of recent hemorrhage there was a pronounced degree of secondary anemia. Dyspeptic symptoms, such as bloating, gaseous eructations, regurgitation, nausea and occasional vomiting were frequently observed, but rarely prominent. Vomiting was a marked symptom in but three cases, while it occurred fairly frequently in thirteen.

In the cases of this series the history, together with the evidence of ulcer furnished by x-ray studies, made the diagnosis with a high degree of accuracy.

Summary of findings in typical peptic ulcer: The patient presents himself complaining of epigastric pain occurring at a fairly definite time after meals and in the great majority of cases relieved by taking soda or food, or less often by vomiting, which is frequently induced. Occasionally the pain radiates, usually to the back. Frequently night-pain is a disturbing feature. Although hematemesis and tarry stools occurred in nearly 20 per cent. of the cases, the occurrence of these phenomena in relation to the duration of the disease and the number of exacerbations is relatively infrequent. Rather rarely vomiting is a prominent symptom. Belching, regurgitation and other dyspeptic symptoms occur frequently but as a rule they are not particularly distressing to the patient.

The radiographic findings show evidences of an ulcer in some portion of the stomach or in the first portion of the duodenum.

ATYPICAL FORMS OF PEPTIC ULCER.

The atypical class of peptic ulcer includes twenty-six of the eighty cases studied. This class may be divided into six types and contains the modification of the typical group produced by benign pyloric obstruction. The types are as follows:

The gall bladder type of peptic ulcer. This class is characterized by pain resembling in all respects that occurring in cholelithiasis. The pain occurs either in periods of exacerbation, such as is the rule in the typical class of peptic ulcer, or at irregular intervals. The following case report illustrates this variety.

Case No. 2. J. S. Med. No. 12180. White, male, tailor, aged 52. Admitted to Peter Bent Brigham Hospital November 1, 1919, and transferred to Surgical Service November 13, 1919.

Diagnosis: Preoperative diagnosis, chronic cholecystitis; postoperative diagnosis, gastric ulcer.

The patient was admitted to the hospital complaining of abdominal pain. The past medical history was unimportant.

Gastric History: During the past fifteen years there had been attacks of severe pain, beginning in the gall-bladder region, radiating around the right costal margin to the back and up under the right scapula. The point of maximum intensity was in the right axillary line just above the costal margin. The onset of pain was abrupt and the latter persisted from 15 to 30 minutes. Pain occurred at any time of the day or night and bore no relation to meals. From 2 to 10 painful attacks occurred a day, and were accompanied by much belching. The attacks persisted for a couple of weeks then disappeared not to recur for a year or two. The patient had never vomited, although he had often been nauseated. There had been no jaundice, dark urine, or clay-colored, bloody or tarry stools.

Physical Examination: The physical examination was essentially negative.

Roentgen Report 16544. Esophagus was normal in outline. The position of the stomach was slightly to the left of the mid-line. There were rather weak peristaltic waves. There were no tender points on palpation over the stomach. Stomach was freely movable, and no filling defects were seen. Its outline was regular, but there was a marked prepyloric bulge. Duodenum was small, the cap not well made out. Duodenum was drawn well up under the gall-bladder region, was in an oblique position, but was not tender on palpation. Ileum was low, freely movable and showed a small six-hour residue. The head of the column of barium was in the cecum at the end of six hours; at the end of twenty-four hours it was in the sigmoid. Cecum filled normally, was freely movable and showed no tender points. It contained a twenty-four hour residue. Appendix was not visualized. Colon filled normally, had a rather low position and no fixed areas were discovered.

Interpretation: The prepyloric bulge, with no definite evidence of the sphincter itself, together with the abnormally placed duodenum is probably the result of an extragastric rather than of an intragastric process; *i. e.*, a tumor or adhesions.

Clinical Pathology: The fasting stomach contents contained free HCl 15 and total acidity 38. The benzidin test was negative. Gastric contents after an Ewald test breakfast contained free HCl 58 and total acidity 70. Two stools contained no occult blood. The usual examinations of blood and urine were negative. The Wassermann reaction in the blood serum was negative.

Surgical Note: The patient was operated upon for supposed gall-bladder disease. The gall bladder was opened and showed nothing pathological. The first portion of the duodenum was tied to the gall bladder by a broad, vascular, congenital band of connective tissue. This band arose from the proximal two-thirds of the gall bladder, crossed the duodenum and was inserted into the transverse mesocolon. An old ulcer was found on the inferior surface of the pyloric sphincter and had constricted the entire pyloric ring.

In this case (Case No. 2) the pain was typical of cholelithiasis. The only resemblance to that of peptic ulcer was its occurrence in exacerbations. The radiographic picture was so obscured by the effect of the congenital adhesions on the outline of the pylorus and duodenal cap that the ulcer was not able to be detected. However, under usual conditions the deformity due to an ulcer, in the pylorus, sphincter or duodenum, can be demonstrated, as was done in three cases of this type of ulcer. In this type of case the diagnosis can be made by the aid of radiographic studies, provided the latter show findings definitely characteristic of ulcer. As will be discussed later, x-ray findings resembling ulcer of the stomach and duodenum may be produced by causes other than ulcer. A history of jaundice may even be present in this type of ulcer case and yet at operation the gall bladder found to be normal, as occurred in one case (Med. No. 11972).

The pain in certain numbers of this group is located in the epigastrium and it may or may not radiate. There are six examples of this type of pain in this series. However, in certain of the cases the pain was not particularly severe; in one case it was dull, aching in character.

Type of peptic ulcer resembling malignancy. Three cases whose clinical picture resembled closely that of malignancy superimposed upon peptic ulcer have been studied. The three cases were operated upon and portions of the ulcers excised and examined microscopically; they showed no malignant changes. In one case there was a history typical of painful peptic ulcer of 27 years' duration. In the other two cases there had been no pain (except in the last exacerbation in one case) but only mild epigastric distress associated with dyspeptic symptoms. The resemblances to ulcer were (1) the long duration, 6 and 15 years, and (2) the occurrence of remissions and exacerbations of the symptoms.

The following case report is an example of the type of ulcer which resembles malignancy.

Case No. 3. J. C. B. Med. No. 11906. White, male, retired, aged 78. Admitted to the Peter Bent Brigham Hospital September 26, 1919, and transferred to the Surgical Service October 14, 1919.

Diagnosis: Preoperative diagnosis, malignancy superimposed on an old ulcer; postoperative, gastric ulcer and benign pyloric stenosis.

The patient entered the hospital complaining of "stomach trouble." The past medical history is unimportant.

Gastric History: The symptoms consisted of anorexia, belching and occasionally epigastric distress occurring three to four hours after meals. The epigastric distress was temporarily relieved by soda or food. These symptoms had persisted with remissions and exacerbations for a period of six years. There had been no vomiting and no bloody or tarry stools. During the last eight months prior to admission to the hospital distress three to four hours after meals, flatulence and belching had been present continuously. There had been nausea occasionally, but no vomiting. During the latter three months of the present illness the patient had lost 35 pounds in weight.

Physical Examination: Other than the evidences of considerable loss in weight the physical examination was essentially negative.

Roentgen Report 16090. Two fluoroscopic examinations were made. The stomach was dilated and atonic. Peristalsis on one examination was practically absent, while in the second it was vigorous and of the obstructive type. There was a constant filling defect in the region of the antrum, the margins of which appeared irregular in outline. The sphincter was not seen. Practically the entire six-hour barium meal was in the stomach, and at the 24-hour observation the stomach was still outlined by barium.

Interpretation: The findings are those of a carcinoma involving the sphincter and causing pyloric obstruction.

Clinical Pathology: The fasting stomach contents contained remnants of food eaten fourteen hours previously. Free HCl was 10 and total acidity 43. After an Ewald test breakfast the gastric contents contained free HCl 40 and total acidity 60. . Benzidin test for occult blood was negative. Hemoglobin was 80 per cent., and the white cells 8,000 per c.mm. The Wassermann reaction in the blood serum was negative. The urine contained no pathological elements.

Surgical Note. The preoperative diagnosis in this case was malignancy superimposed on an old ulcer. At operation the pylorus was found to be obstructed by a mass of scar tissue resulting from an old ulcer, and no evidences of malignancy were found even by microscopic examination of an excised piece of the tissue.

In the above case the presence of anorexia, the other symptoms of the dyspeptic group, the marked loss of weight and the x-ray findings led to the diagnosis of malignancy. In this case pyloric obstruction was present but in the two other cases of this type the ulcer was on the lesser curvature, far removed from the pylorus. The latter two cases showed marked secondary anemia, and in one there had been marked loss of weight. But in these two cases the x-ray findings were such as definitely to rule out all but microscopical evidences of cancer. It is worthy of note that free HCl was present in the gastric contents, of the three cases, removed after an Ewald test breakfast.

Peptic ulcer with constant epigastric pain. Four cases of gastric ulcer, the diagnoses confirmed at operation, have come under observation in which the patients complained of constant epigastric pain. In one of these the pain was unaffected by food, while in the others food aggravated it. In one of the cases the x-ray findings were diagnostic; *i. e.*, an incisura and a niche present on two examinations made several weeks apart. In the other cases the radiographic findings were distinctive but not diagnostic. They are illustrated by the following case report.

Case No. 4. E. V. W. Med. No. 10783. White, female, clerk, aged 21. Admitted to the Peter Bent Brigham Hospital March 31, 1919, and transferred to the Surgical Service April 3, 1919.

Diagnosis: Ulcer of the stomach (non perforating); chronic cardiac valvular disease, mitral stenosis and insufficiency.

The patient entered the hospital because of abdominal pain. The family history was essentially negative. The patient had had rheumatic fever at the age of 8 years, pneumonia at 12 years, and tonsillitis at 16 years. Otherwise the past history was essentially negative.

Gastrointestinal History: During the years 1916 and 1917 the patient had "bilious attacks" characterized by headache, nausea and vomiting. Such an attack was of about two days' duration, and confined the patient to bed. In February, 1918, the onset of knife-like pain occurred. The pain was located in the xyphoid region, it occurred without relation to food, and was relieved by vomiting. At times the pain occurred during the night. Pain persisted until September of the same year. At this time hematemesis occurred. The patient now took medical treatment for gastric ulcer with a good result. For about seven months the patient was free from symptoms. There then developed constant pain in the epigastrium of variable severity and which radiated along the right costal border. The pain was worse immediately after eating. Night pain was not a disturbing feature.

Physical Examination: Except for the usual signs of mitral stenosis and insufficiency the physical examination was essentially negative.

Roentgen Report 14451. Stomach was normal in position and tone, freely movable, with hyperperistalsis. There was a medium sized six-hour residue. There was a small area on the lesser curvature, in the region of the antrum and sphincter, over which peristaltic waves did not pass, while they were plainly visible along the greater curvature. The sphincter was tender to palpation. Duodenum was normal in outline and position. The ileum was not remarkable. At the end of 6 hours the head of the barium column had reached the transverse colon and in 24 hours it was in the rectum. The cecum was normal. Appendix was not seen. Entire colon was empty at the 24-hour observation.

A second examination one week later gave the same findings.

Interpretation: The findings are those of a probable small ulcer involving the sphincter and antrum.

Clinical Pathology: Examination of the fasting gastric contents showed no stasis, no free HCl and a total acidity of 16. The benzidin test for occult blood was strongly positive. After an Ewald meal the free HCl was 20 and the total acidity 50. The stools contained no occult blood. The Wassermann reaction in the blood serum was negative. The usual examinations of the blood and urine were negative.

Surgical Note: At operation a small ulcer was found. The ulcer involved the proximal portion of the pyloric sphincter.

The type of peptic ulcer with marked vomiting. Vomiting was a marked symptom in 4 cases. In 3 of these cases there was no abdominal pain; in one (gastric ulcer) there was mild epigastric distress followed by vomiting immediately after meals, in another (duodenal ulcer) there was slight epigastric distress accompanied by vomiting but not related to meals, while epigastric distress was rarely present in a third case (duodenal ulcer) and the vomiting was not related to food. In the fourth case vomiting followed severe epigastric pain; the pain was not related to meals. In the first three cases. in which the diseases had been present one to forty years, exacerbations had occurred, while the fourth case came under observation in the first attack. A history of hematemesis was obtained in each case.

An example of a pure type of this variety of ulcer is given in the following case report.

Case No. 5. E. B. White, male, attorney, aged 60 years.

Diagnosis: Chronic duodenal ulcer.

The patient was under observation 14 days in the fall of 1919. The family history and past medical histories were negative.

Gastric History: For the past 40 years the patient had had periodic attacks of vomiting occurring a few times a year and persisting for weeks. During an attack 10 years ago severe hematemesis occurred. Medical treatment for gastric ulcer was taken with apparent recovery. Since then until the summer of 1918 the patient had remained free from symptoms. In July, 1918, an attack similar to the present one occurred. X-ray studies at that time showed a deformity of the first portion of the duodenum. Medical treatment for duodenal ulcer resulted in complete arrest of symptoms, except for some occasional epigastric distress quickly relieved by soda, until the onset of the present illness. The latter began two weeks before the patient came under observation. During this period there had been some belching and on one day vomiting (no hematemesis) preceded by slight epigastric distress. The vomitus had contained lettuce eaten 12 hours previously. During the 36 hours prior to observation the patient had vomited frequently. The vomitus consisted of considerable quantities of greenish, non-bloody, non-food containing liquid. No pain or epigastric distress had been present.

The physical examination was negative except for the abdomen. Just to the right of the umbilicus was an easily palpable, small, sausage-shaped, hard and freely movable tumor. Two days later, after the cessation of vomiting, the abdominal tumor had disappeared, although the character of the abdomen was favorable for palpation.

Roentgen Report: The stomach was normal in position and tone, and its outlines were regular. The antrum and pyloric sphincter were normal. Peristalsis was active, at times vigorous, nevertheless there was a moderate sized six hour barium residue. Tht first portion of the duodenum was oblique in position. The outline was constantly irregular on the lesser curvature side of this portion of the duodenum.

Interpretation: The findings are those of an ulcer in the first portion of the duodenum.

Clinical Pathology: Examination of the different specimens of vomitus showed no food residues, even when solid food had been taken 12 hours previously. Free HCl was present. The benzidin test for blood was negative. The stools contained no occult blood. The Wassermann reaction in the blood serum was negative. The usual examinations of the blood were negative. The urine contained a few red blood cells due to a mild grade of chronic prostatic disease.

Peptic ulcer may be complicated by the development of organic pyloric or duodenal obstruction and of multiple ulcers. The latter may at times be diagnosed by radiographic studies. Obstruction is indicated by more or less frequent vomiting of food eaten 12, 24 or more hours previously and the finding of food residue in the fasting gastric contents. A positive diagnosis of pyloric obstruction can be made by the proper radiographic studies. Many of the cases reported in this series were chronic perforating ulcers; but the symptoms permitted this diagnosis to be made only after x-ray or operative studies.

The method for obtaining samples of gastric contents, in 61 of the cases, was one modified from that of Rehfuss. A Rehfuss tube was left *in situ* throughout the entire period of collection of samples. The latter were drawn off at 40, 60 and 80 minute intervals.

Free HCl was present in the contents of the fasting stomach in 43 and absent in 18 cases. The total acidities present after an Ewald test breakfast in the 61 cases are as follows: above 70 in 22 cases, from 60 to 70 in 11 cases, from 30 to 50 in 23 cases, and below 30 in 5 cases. These figures represent the highest total acidities present among the three samples obtained at one sitting. For this reason the number of high acidities recorded is greater than if the meal had been extracted at the 60 minute period only. From the relative number of gastric contents with high acidity it is seen that the latter is a common finding in the presence of peptic ulcer. However, a high acidity is often found in gastric neuroses and other conditions. Lockwood[1] estimates that 80 per cent. of hyperacidities are due to causes other than peptic ulcer. For these reasons the value of the finding of a high gastric acidity in a given case as an aid in the diagnosis of ulcer is problematical. On the other hand, the presence of free HCl is of some importance because the latter is rarely found when malignant changes affect the stomach. Food residue, as obtained by the stomach tube, is also of some value in relation to the diagnosis of pyloric obstruction, especially if it is persistently obtained on repeated examinations. However, it may occur in the absence of organic obstruction; *i. e* pylorospasm, atony.

Occult blood was demonstrated in both the gastric contents and stools in 6 cases, in the gastric contents alone in 5 cases and in the stools alone in 16 cases. If occult blood tests are positive in the gastric contents obtained by frequently repeated examinations, then it is fair to assume that the source of the blood is an intragastric or duodenal lesion. If blood is present on a few examinations only there is no way to conclude whether or not its sole source has been incident to trauma produced by the stomach tube. For this reason the finding of occult blood in the gastric contents is usually of scant aid in the diagnosis of peptic ulcer. However, the obtaining of gross quantities of changed blood is of decided diagnostic value.

The persistent finding of occult blood in the stools, after ruling out extraneous causes such as hemorrhoids or fissure, has been a rather infrequent finding in the cases of this series; *i. e.,* on two or more examinations in 15 of the 80 cases. To make sure of the source of blood, stools resulting from meat-free diets must be tested. When obtained under this condition a positive blood test has no differential value between ulcer and cancer and as to what part of the gastrointestinal tract is affected. But it does indicate an active process somewhere in the gastrointestinal canal.

Summary of laboratory findings: Gross blood in the gastric contents and vomitus, or in the stools, is of much diagnostic value; although it may result from causes other than benign ulcer. The history of repeatedly vomiting old food residues or their persistent presence in the gastric contents have some value as an aid in diagnosing organic pyloric obstruction. The presence of free HCl in the vomitus or gastric contents is occasionally of some aid in differentiating between ulcer and cancer. The persistent presence of occult blood in the stools indicates hemorrhage somewhere in the gastrointestinal tract.

It is the experience of this clinic that by radiographic studies evidence of gastric or duodenal ulcer can be demonstrated in the great majority of ulcer cases in which such studies are properly executed. Mayo[2] states that such evidence is found in 95% of cases of peptic ulcer. The exact character of these findings is fully discussed by Carman.[3] There are cases of peptic ulcer in which the x-ray findings are negative by all methods of examination. In cases of duodenal ulcer the serial method of taking plates, devised by Cole, may demonstrate evidences of ulcer when other radiographic procedures fail. Three cases were observed in this clinic during the past year in which the symptoms were those of peptic ulcer, but in which x-ray findings were negative. In one of these cases an ulcer in the first portion of the duodenum was demonstrated at operation. The serial method of taking plates was not used in these cases.

By x-ray studies whether the food residue is the result of organic or spasmodic pyloric obstruction, or to simple atony can be definitely determined; *i.e.*, in six cases of organic and several of spasmodic obstruction in this series. In all but rare, exceptional cases the differential diagnosis between ulcer and cancer can be settled by radiographic studies. From these findings it is evident that the value of x-ray studies as an aid in the diagnosis of gastric and duodenal ulcer is much greater, in the vast majority of cases, than the data obtained from the usual laboratory procedures. However, it must not be inferred that x-ray findings are diagnostic in themselves. The causes producing certain irregularities in the outline of the stomach and duodenum, which resemble those of ulcer, are at times difficult to determine. This is illustrated by Cases Nos. 2 and 3 and in the following case report.

Case No. 6. M. M. McC. Med. No. 10448. White, female, domestic, aged 43. Admitted to the Peter Bent Brigham Hospital February 5, 1919, and discharged improved February 24.

1919. Admitted to Surgical Service May 7, 1919.

Diagnosis: Preoperative diagnosis, ulcer of the duodenum; postoperative diagnosis, perigastric adhesions.

The patient entered the hospital complaining of stomach trouble. One brother died from hematemesis and a sister of cancerous obstruction of the bowel.

Gastric History: The patient had been troubled with indefinite symptoms of indigestion for 20 years. Since the death of her husband and the onset of the menopause one year ago the dyspeptic symptoms had grown worse. These consisted of fulness and gas after food, followed in three to four hours by a gnawing sensation in the epigastrium. Occasionally the gnawing sensation became true hunger pain, which would be relieved by soda or food. Frequently the pain awakened the patient in the early morning hours. She vomited for the first time two months before admission to the hospital. The vomitus contained a slight amount of red blood. The appetite was good. There was no loss in body weight.

Physical Examination: The physical examination was negative except for slight epigastric tenderness, some cardiac enlargement and hypertension, blood pressure of 178 mm. systolic and 100 mm. diastolic.

Roentgen Report 13843. Esophagus was not remarkable. Stomach was high, freely movable and normal in tone with hyperperistalsis. There was a small six-hour barium residue. A good sphincter was seen. Duodenum was large, but could not be completely filled, was distorted in outline and there was tenderness on palpation. Ileum was not remarkable and contained a six-hour barium residue, while the head of the barium column had reached the hepatic flexure and in 24 hours was in the rectum. The cecum contained a 24-hour barium residue. Appendix was not seen. Colon was not remarkable.

Interpretation: Duodenal findings are those of an ulcer.

Clinical Pathology: The fasting stomach contents contained no food residue, no free HCl and a total acidity of 10. The benzidin test for occult blood was negative. The gastric contents after an Ewald test meal contained free HCl 40 and a total acidity of 80. The benzidin test was negative. Twenty stool examinations for occult blood were negative. The usual examinations of the urine and blood were negative. The Wassermann reaction in the blood serum was negative.

Progress: On a Sippy diet the patient improved somewhat during her stay in the hospital. After discharge she relapsed and finally was operated upon for a supposed duodenal ulcer. However, no ulcer was found. Instead, adhesions to the gall bladder were present and accounted for the radiographic findings of a distorted duodenal cap. The adhesions were removed and a posterior gastrojejunostomy performed. After recovery from the operation the patient's former symptoms returned and were present three months later.

The preoperative diagnosis of duodenal ulcer in this case rested upon the history and x-ray findings. Such cases as this and Cases No. 2 and 3 make it evident that radiographic studies are to be considered as but a part of the physical examination of the gastrointestinal tract. X-ray findings, like those obtained from other methods of physical examinations, are to be considered as but a part of the symptom complex, in relation to which they must be interpreted.

CONCLUSIONS.

The symptomatology of peptic ulcer may be divided into typical and atypical groups. The typical type, by the aid of radiographic findings, may be diagnosed with a high degree of accuracy. In the diagnosis of the atypical class x-ray studies are of the utmost value; in many cases the diagnosis cannot be made without the aid of radiographic findings.

X-ray studies should form a part of the physical examination of every gastrointestinal case. Their importance in the diagnosis of peptic ulcer is second only to that of the history of the case.

X-ray studies are the most efficient and accurate aids in the differentiation between functional and organic pyloric obstruction, and between ulcer and cancer.

In the great majority of cases laboratory findings are of less value as an aid in the diagnosis of peptic ulcer than those obtained from radiographic studies.

The laboratory findings valuable in diagnosis are gross amount of blood in the vomitus or gastric contents, the frequent vomiting of old food residues, and tarry stools. Findings of less value are the persistent presence of occult blood in the stools, the presence of food residue in the gastric contents, and the presence of free HCl in the gastric contents.

REFERENCES.

[1] Lockwood, G. R: Diseases of the Stomach, New York, 1913, 460.

[2] Mayo, C. H.: Collected Papers of the Mayo Clinic, 1918, x, 81.

[3] Carman, R. D., and Miller, A.: The Roentgen Diagnosis of the Alimentary Canal, Philadelphia, 1917, 386.

IMPLANTATION METHODS IN COSMETIC RHINOPLASTY.

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Apart from the at one time widely popular method of cosmetic rhinoplasty by means of paraffin injections, various implantation methods have received attention by operators interested in this work, and especially so since reports of the unsatisfactory results of paraffin injection began to creep into the literature. The work of Roe and his advocacy of the intranasal method of cosmetic rhinoplasty served to stimulate considerable interest in the subject, but unfortunately Roe's work was shrouded in so much mystery that little real progress was made except by the few pioneers here and there who sought to improve on existing technics, or to elaborate more satisfactory ones. To provide a suitable framework and support for noses whose bony framework had been weakened or destroyed by trauma, operative or otherwise, a number of different materials have been employed for implantation, among which may be mentioned gold, German silver, filigree wire, hard rubber, decalcified bone, ivory, celluloid, etc. Some of these materials have been commented on most enthusiastically and implanted with apparently excellent results, but the usual experience was that these foreign body implants healed in beautifully, and then after a variable length of time either showed marked absorption or other disintegrative change with loss of the cosmetic result obtained; either this, or these foreign body implants became the seat of such unmistakable irritation that their removal was rendered necessary, and hence the ultimate cosmetic result was often worse than the original condition. For these reasons most of the materials above enumerated have been discarded in favor of better and more physiological methods.

In 1889, Dr. Weir employed the breastbone of a duck for restoration of a nasal bony framework, and numerous other animal transplants have been employed from time to time, but none of them proving ideal in all respects.

For convenience, such transplants may be outlined as below:

1. The autoplastic operation, that is, the transference of bone or cartilage from one part of the body to another, which experience has conclusively demonstrated to be the ideal method, and the one which gives the best and quickest results.

2. The homoplastic, or transplant of bone or cartilage from one animal to another of the same species, and it may be said that this method is also often successful.

3. The heteroplastic, or transplant from one animal to another of a different species; usually unsuccessful.

At this time the autoplastic operation is almost universally used, and material taken usually from the tibia or rib. Pieces of turbinate, septal cartilage and bone from other regions of the body, have been utilized with success. As a general rule, rib is more often used than tibial transplant. There is a considerable difference of opinion as to the fate of the tissue thus transplanted, the majority of writers holding that all transplanted bone is resorbed and is replaced by a new growth of bone from the periosteum. Where rib is employed, a segment about two inches in length is taken, the upper two-thirds consisting of bone and the lower third of costal cartilage. In regard to the question of whether it is better to use bone or cartilage for transplantation, Lee Cohen lays down the sensible proposition that where bone formerly existed bone should be preferred, and where cartilage existed formerly cartilage should be used. He states that the required thickness of the transplant was the criterion as to whether the tibia or rib should be used. Where a long thin span was needed he uses rib, but never the entire thickness of the rib. Instead of resenting entire rib portion he makes a pattern of a metal strip the size of bone transplant desired, and after sterilization, exposes the rib, lays metal strip on it, marks out the size of the piece to be removed, the upper two-thirds over bone and the lower third over the sternocostal cartilage, so that bone is employed in regions where bone previously existed in the nose, and cartilage below, where cartilage should normally be. He uses the outer table of rib, down to the diploeic structure only, and this is removed with a narrow straight chisel, with implantation over nasal dorsum by incision within the nasal vestibule. It is needless to say that the rib transplant is removed under aseptic precautions, and to still further obviate danger of infection, separate instruments should be used for the nasal work, and the transplant handled only instrumentally.

Experience shows that periosteum and perichondrium should be left on at least one side of the graft, usually that in contact with the skin. Care should also be taken to see that the under surface of the graft is in contact with the periosteum-denuded nasal bones. Where rib transplant is used, it may preferably be taken from the eighth or ninth ribs, about two inches in length and consisting of two-thirds rib and one-third costal cartilage.

Where there is marked deformity, several fragments of bone may be superimposed to fill out the dorsal outline of the nose to the required degree; this is preferable to the use of one large fragment of bone as the smaller transplants possess relatively greater osteogenetic power than the larger ones.

In cases where the deformity is not marked, a septal spur or deflection may be removed by submucous resection and transplanted onto the bridge of the nose to fill in a depressed portion of the same, a pocket being made by blunt dissection and the transplant pushed into place without suturing. Recently I have employed a portion of the middle turbinate body with its epithelial covering denuded with very satisfactory results.

It may next be in order to describe in a general way the technic employed in implantation for restoration of the bridge of the nose, the steps and method of operation being modified in different cases to meet somewhat different conditions encountered. The operation may be performed under general, but preferably under local anesthesia.

Under aseptic precautions and local anesthesia, a segment is taken from the ninth rib about two inches in length and consisting of two-thirds rib and one-third costal cartilage, care being taken not to fracture the junction between bone and cartilage. The periosteum on the anterior surface of the transplant is preserved, and the segment of rib, which is only down to the diploeic structures in thickness, is fashioned to suit the deformity to be corrected.

The nose and adjoining parts of the face are swabbed with tincture of iodine, followed by alcohol cleansing, and likewise the interior of nose may be swabbed with iodine. Some operators tampon the nose well back to prevent blood and secretion flowing back into nasopharynx, although I have not found this necessary. The nose is anesthetized internally by swabbing with 10 per cent. cocaine after the manner of preparation for a submucous resection of the septum, while subcutaneously the field of operation is anesthetized by hypodermic injections of one per cent. sterile cocaine solution. The subcutaneous tissues are well infiltrated, and also the submucous tissues about the nasal vestibule. While excessive bleeding is not a characteristic of these operations, yet a small amount of adrenalin may be combined with the cocaine solution with advantage. Tissues about the tip of the nose appear particularly sensitive and should be well anesthetized.

After the local preparation, as described above, the tip of the nose is raised and a small spatula-shaped knife introduced into the nasal cavity at a point directly below the level of the nasal bone. Through this opening, the tissues over the dorsum and lateral aspects of the nose are freely elevated and undermined, the extent of the undermining being dependent upon the nature of the deformity, and the size of implant to be inserted. After preparation of a suitable pocket where indicated over the dorsum, the transplant is introduced intranasally and slipped down into position by pulling on the tip of nose for manipulation of lower end of transplant, while the upper end is securely tucked under the periosteum in close contact with the frontal bone. Where the deformity is marked, several fragments of bone may be superimposed, this being preferable to using one large fragment, as small transplants have been found to possess relatively greater osteogenetic power than large ones. Depending upon extent of the deformity, turbinate cartilage well denuded of its mucosa may be used, as also septal cartilage taken from the patient by submucous resection, or less favorably from another patient. As a rule, no suture is required to hold the transplant in position. In general, drainage is not required, but where deemed advisable, small strips of rubber tissue may be carried well up onto the dorsum of the nose between the nasal bones and the skin, the ends hanging out of the intranasal incisions made for undermining, and care being taken upon their withdrawal that the implant is not disturbed. The vestibules may be packed with petrolatum gauze, or with bismuth-petrolatum gauze, and externally the nose protected by a splint of dental compound held in place by adhesive straps across the face and dorsum of nose.

Where reaction is extensive, it may be controlled with ice compresses and for the first night after operation a sedative is of service in insuring the patient a quieter night with less likelihood of damage to the nose in sleep. The nasal splint should be removed daily, as also the intranasal packing, and the nasal passages cleansed with douching and steam inhalations; where drainage has been employed, the rubber strips can be left *in situ* for several days, and likewise the nasal splint may be worn for several days, particularly at night.

Bibliography.

Koile, F. S.: Plastic and Cosmetic Surgery, 1911.
Loeb, H. W.: Operative Surgery of the Nose, Throat and Ear, Vol. 1.
Roe, J. O.: The Correction of Nasal Deformities, The Laryngoscope, Vol. xviii.
Cohen, L.: Bone and Cartilage Grafting in the Correction of External Deformities of the Nose, So. Med. Jour., 1919.
Carter, W. W.: The Value of Bone and Cartilage Transplants in Rhinological Surgery, Trans. Am. Acad. Ophthal. and Otolaryngology 1916.
Babcock, W. Wayne: Osteoplastic Surgery of the Face, Jour. A. M. A., 1915.

BIO-KINETIC THERAPEUTICS. A TERM OFFERED TO DESCRIBE REMEDIES APPLIED FROM THE OUTSIDE, ACCESSORY OR SUPPLEMENTAL OR AUXILIARY OR SO-CALLED "PHYSICAL THERAPEUTICS."[*]

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Nothing so retards the acceptance and adoption of well attested remedial measures as vagueness or unsuitableness in definitions, designations, or descriptive terms. On the other hand, acceptance of inadequate measures is oftentimes proportional to the picturesqueness of the nomenclature.

Remedial measures applied from the outside have now reached a state of scientific and practical permanency on a full parity with those taken, or put, into the organism. As yet, however, they have by no means come to inspire the confidence they abundantly deserve, and particularly in the appreciation of the profession. Among the chief reasons for this neglect, or suspicion, is the absence of a suitable nomenclature. In consequence those who discuss or make use of them, fail to comprehend each other. Consistence in reasoning as well as in expression becomes impaired. The best interests of the public are thus made to suffer.

In searching for a comprehensive epithet to include all those groups of remedial agencies often referred to as auxiliary, accessory, supplemental, or the wholly cloudy word "physical," the prime need is to adopt one uniformly related to some basic principle, or denominator common to all.

This basic idea or element is motion in some or other of its infinite modalities. All life being motion, energy in its kinetic phase, actuation, doing, performing, constructing, reconstructing, adapting, therefore efficient life processes are sustained by the maintenance of equilibrium.

The primal attribute of protoplasm is that it resumes its former immediately preceding position, shape, adjustment, after encountering opposing forces; in short it exhibits automatic stabilization.

The chief requisite in problems of disordered states, then, is for restoration of order, of structural and functional normalities or health. This can be done, and only done through suitable adaptations and applications of kinetic energy, that is bio-kinetic remediation. The French writers use the word bio-kinetic and with this significance, though in a restricted sense.

Thus we may contrast pharmaco-dynamics or chemico-dynamics and kineto-dynamics. The cell undergoes no essential or structural change after the application of kineto-genic stimuli designed to achieve adaptation or readaptation, whereas it always undergoes some change after chemico-genic agencies have been applied.

Hence we may conclude that kineto-genic remedies are at least safer than chemico-genic remedies.

It is fair to assume that when the resources of kineto-genic remedies come to receive the same attention, equally careful, critical, scrutiny, as has been given to pharmaco-genic agencies, they will take a place in scientific and popular esteem on a full parity with those now given major credence. Man lives not so much by bread alone as by feelings, preferences, traditions, customs, fashions. He believes in proportion as ideas are clothed in the odor of sanctity, conferred by authority, through age-long familiarity, the mass energy of usage, or of folk ways. Man's consciousness reacts most readily to complexes, catch words, growing into wise sayings, maxims, proverbs, aphorisms.

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[*] Read before and discussed by the New England Society for Physical Therapeutics January 27, 1920.

When you come to think of it all, remediation is a process of equilibration or stabilization, or of orthobiosis. Now if this balancing of urges, of impulses, with restraints can be achieved as readily, as controllably and as permanently by a nice selection and judicious application of mechanistic instrumentalities, it would seem they should at least fulfill the primary requirement of any curative measure, and that is *to do no harm*. Powerful drugs (chemico-genic remedies), on the other hand, even scientifically selected bacterio-genic, sero-genic, or vaccino-genic substances when thrust into the interior of the organism, are admitted to oftentimes induce baffling by-effects or excess reactions which, so far as I know, are incapable of being controlled *per se*, however much they may be neutralized, nullified or antagonized by other contrarily acting, yet similar substances or instrumentalities introduced within to meet, and offset, their undesired influences.

Most, if not all, of those agencies or instrumentalities applied from without are, as has been said, in essence and at bottom some manifestation of motion, active or passive, positive or negative, actuating or inhibiting. Hence we might use the term kinesis or bio-kinesis and not go far wrong in the way of description. The term kinematics is more inclusive, being that part of the science of mechanics which treats of motion, its direction, velocity, acceleration, composition, and the like modifications of energetics, without reference to mass or restraints. Therefore, why may we not adopt some descriptive term which involves the idea of release of energies such as kineto-genics, through manifestations of electro-genics, radio-genics, photo-genics, thermogenics, always including psycho-genics and the like. Among the detail subjects are climato-genics, areo-genics, hydro-genics, etc. It would be well to visualize in some one term the resources of latent dynamics, conveying the idea of weight, ponderability, of mass, of gravity, and hence as a correlate the need of structures for support, suspension, fixation, local rest, of positions of advantage or of disadvantage and hence for adjustment.

Health is generally admitted to be an orderly action, reaction and interaction of the forces at work in the organism, and unhealth is a disorderliness. "Order" is said to be "Heaven's first law," hence the prime desideratum of therapeutics is to restore order, equilibrium, stabilization. There can be no more praiseworthy enterprise than to restore orderliness in human bodies when they are disordered. This is to be achieved by kinetics, that manifestation of dynamics in which forces are causing or modifying, or changing the manifestations of motion in bodies, or of the circumstances of actuation or inhibition in those bodies.

The primal objective of the science of therapeutics is to secure uniformity in the aims and directions of approach to the problem of restoring balance or poise in functions (health). We should come to some agreement upon what those aims shall be, and, in order to achieve those aims we must unify the terms used in the procedures. Until we reach some stability in this realm of endeavor we remain, as at present, unfamiliar with, or not wholly understanding, the language or our colleagues.

Indeed, when once we make a satisfactory start, when we can come to agreement as to the type of words we shall use, the duty arises to clothe the primary ideas of health processes or of repair in a language at once suitable and consistent and broadly intelligible.

Simplification of technical terms is a paramount desideratum, but full regard should be had for exactitude, the essential significance. Old words and terms are liable to acquire transferred meanings, to wander away from the primary intent. Example: the word phusis, growth, is so misused that we have "physiology" on the one hand and in sharp contrast "physics"—a confusion of the living and the dead—of organic or inorganic. If a word can be found of reputable origin, whether in or out of use, capable of being utilized and expressing scientific significances, one upon which we can agree as to its use, let us do so.

This by no means leads to a diffusion of significances, rather to a bringing back of their essences, to the restoring or reclothing them with not a new but a true meaning, a redintegration.

For another example, consider the term orthopedics, which signifies the process of straightening out a crooked child—a most laudable enterprise—but as a description of what is now intended, misleading when applied to readjusting adults or old men. The processes of orthopedics involve motion, prompt or graduated, applied by the hand or by apparatus or by cutting such structures as are permanently obstructive. It is a process of remedying through encouraging motion in a living mechanism or organism.

The process is one of kinesthesis or kinesis, or kinesiatrics, or of akinesis, the life element is indicated by the root term "bion." An even better one, the term orthobiotic, is also used by the French to embrace a larger group of subjects, the straightening out of life, the whole of life processes, including the mind—psycho-orthobiotics.

I would submit that we might do worse than to adopt and recommend this comprehensive term orthobiotics and the special one biokinetics as descriptive of that entire enterprise of readjustment, restitution, rearrangement, rather than orthopedics as now conceived and employed.

Finally, the great domain of physical hygiene, regulation of conduct (chiefly physical) and of behavior, chiefly of the affective faculties,—feelings, emotions, etc.,—which needs a better presentation through improved terminology. The aim is harmony throughout all actions and interactions, all manifestations of energy, and even here the one phase most comprehensive is bio-kinetic regulation.

ENDOMETRITIS: ITS PATHOLOGY AND DIFFERENTIATION FROM MALIGNANCY.*

By W. Claude Usher, M.D.

Perhaps no other medical term is used with less precision than endometritis. Many authors, as Dudley, Hirst, etc., speak of it as an independent disease, but many, like Ashton, include under endometritis, all uterine inflammations. A short paragraph from Ashton's "Practice of Gynæcology" will make this clear: "The starting point of inflammatory affections of the uterus is, generally, the endometrium, and the disease may, eventually, extend to the muscular walls of the uterus and even to the peritoneum. Metritis, or inflammation of the uterine parenchyma is, therefore, not a distinct or separate disease, but a condition that is secondary to an infection of the endometrium. Sometimes the peritoneal coat of the uterus is primarily affected, and the disease subsequently involves the parenchyma of the organ, and finally the endometrium. These cases are, however, comparatively rare, and are due to septic inflammation in one of the pelvic organs causing an adhesion between it and the uterus. Again, a laceration of the lower segment of the uterus may be followed by septic infection which may extend into the parenchyma before involving the endometrium."

"In the light of modern pathology, inflammation of the uterine mucosa becomes a subject of vital importance, since it is the starting point of nearly all the inflammatory lesions of the pelvic organs."

Such a statement coming from this well-known authority brings us to a fuller realization of the importance of the endometrium in pelvic disease. While Dudley states that "the most significant factor in metritis is the endometrium," his anatomical classification of metritis into endometritis, myometritis, and perimetritis, lessens the student's appreciation of the importance of the endometrium.

Bewildering, is indeed a mild term to express the variety of classification for endometritis. Bases for such have been etiological, pathological, anatomical, and clinical. Etiologically, endometritis may be said to be: (1) Bacterial (gonococcus), tubercle bacillus, streptococcus, staphylococcus, or saprophytes; (2) non-bacterial (secondary to uterine tumors, cervical lacerations, uterine displacements, etc.). Pathological classification will be considered later; anatomical has already been illustrated (Dudley), and it remains only to speak of the clinical classification, *viz.*, (1) acute, (2) chronic. In routine gynæcological work, these are the two forms most often differentiated; further subdivision of the chronic form into glandular and interstitial types sometimes occurs.

The acute or septic form of endometritis is uncommon, but may follow injury, or more usually pyogenic, saprophytic, or gonorrheal infection of the mucosa. Pyogenic infection with streptococcus or staphylococcus occurs usually after labor, or abortion. However, an acute endometritis may be associated with certain infectious diseases, as typhoid, diphtheria, etc. Pathologically, the mucous membrane is swollen, congested, loosened in attachment, hemorrhagic, and covered with mucopurulent exudate. Necrosis of superficial membrane usually occurs with formation of granulation cell tissue in its deeper layers walling off the process, and preventing absorption. In severer grades, the organisms may penetrate the lymph channels, blood spaces and myometrium, leading to suppuration in the uterine wall, peritonitis, salpingitis, oöphoritis, and probably septicaemia.

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* This paper was written by Dr. Usher, not long prior to his death in 1919, as a part of his work in fourth year gynecology in the Harvard Medical School. It is printed now as a tribute to the memory of this young hospital interne of much promise.

Charles M. Green, M.D.

A clinical or etiological classification of chronic endometritis must be very wide. Thus we might speak of the simple chronic forms including the congestive and constitutional types or of the septic chronic forms including the tubercular, gonorrheal, etc. The chronic endometritis is the usual course in a gonorrheal infection, and leads to the pathological pictures soon to be presented. Tubercular endometritis is, of course, usually secondary to tubercular tubes or cervix, and presents a swollen mucosa with characteristic elements of tubercular tissue, *viz.*, caseous material, tubercles, giant cells, etc., and may be of the miliary, interstitial, or ulcerative types.

Prolonged inflammatory disturbances, whether the result of infection, or of some uterine condition, as displacement, subinvolution, etc., causing congestion, results eventually in increase of both adenoid and of interstitial tissue, *viz.*, hyperplasia. Pope describes it as beginning with a glandular proliferation following microbe infection, or the above causes, with extension to the surface of the underlying parenchyma, and resulting in the formation of embryonal cells. The epithelial surface of the endometrium is raised, and proliferation of the epithelial cells occurs with enlargement, and twisting of the gland tubules. Clinically, this stage might be regarded as a simple endometritis with leucorrhea, but no interstitial hypertrophy. Round celled infiltration of the interglandular connective tissue next occurs, so that the glands become more widely separated by the increased stroma. The round cells may in turn become spindle, and epithelioid in type, and by pressure on the ducts cause swelling of the glands, and retention cysts. The vessels increase in number and size, so the uterine wall becomes congested and we now get the second clinical stage, with leucorrhea and interstitial hypertrophy plus engorgement. Thus, the whole process is really one of young vascular, connective tissue formation, which by successive transformation into spindle cells, fibrils, etc., becomes scar tissue. This continuous pressure on the glands results in their atrophy and disappearance, at least from the surface layers of the mucous membranes. Thus we have the atrophic stage (sometimes termed senile endometritis). To sum up, therefore, the hyperplasia described by Pope and Hirst may be either glandular, interstitial, or of mixed type, *viz.*, both glandular and interstitial. Dudley's histological classification of chronic endometritis into (a) glandular or parenchymatous with hypertrophic and hyperplastic types, and (b) interstitial, agrees well with the above outline.

In Abel's Gynæcological Pathology, endometritis is viewed as inflammatory, and non-inflammatory in origin. Those changes resulting in certain forms of tissue proliferation due to inflammatory disturbances, he speaks of as being either atrophic (interstitial) or hypertrophic in type. This interstitial type agrees with the changes already outlined, *viz.*, round celled infiltration of the stroma, the cells becoming spindle and epithelioid, and proceeding to the organization of scar tissue with subsequent atrophic changes. The hypertrophic type is characterized by simultaneous affection of both glandular and interstitial tissues. It differs from the atrophic (interstitial) type, in that no disappearance of tissue occurs as a terminal event. The glands increase in number and size, and in some places the lining epithelium may become proliferated and exhibit several layers, but never any lawlessness of growth as in malignancy. Through growth and infiltration of a vascular stroma, the glands may be thrown into folds, or by pressure, dilated with cyst formation. The changes in the stroma correspond closely to those already described.

Non-inflammatory conditions present in the mucosa result in what Abel styles hyperplasia, *viz.*, overgrowth of the mucous membrane without microscopical evidence of inflammation. The mucous membrane may be thickened throughout or only in part, giving us (1) hyperplasia of the endometrium, which may assume a diffuse or circumscribed (polypoid) form, (2) hyperplasia of the glands, which we usually designate "chronic hyperplastic endometritis." In this latter form, the interstitial tissue is relatively much reduced, the lining epithelium of the glands may be thickened and in several layers. From the fact that, while such a type, resembling, as it does, malignant adenomas, yet retains its glandular formation, and its epithelial cells always respect the boundary of growth formed by the membrana propria we may style it 'Benign Adenomatous Disease' of the endometrium (Roberts). Such are the cases which require careful microscopic differentiation from neoplasms.

It remains to speak of a type of true inflammatory endometritis usually occurring after an abortion, *viz.*, deciduomal endometritis. While this retention of placental tissue may be the primary cause of the existing inflammation, the latter is, as a rule, a continuance of or a flaring up, of an old septic or gonorrheal infection. The changes are confined principally to the interstitial tissue which shows the decidual cells being separated by numerous round cells with the interpolation of mononuclear leucocytes.

Pathology has been observed to recognize non-inflammatory affections of the endometrium resembling ordinary forms of endometritis in hypertrophy of both glandular and interstitial tissues. Such recognition has not yet attained a firm basis in clinical routine. We still usually label a case with persistent menorrhagia, metrorrhagia, and leucorrhea as a chronic endometritis. Probably two reasons will account for this general tendency on the part of practitioner and specialist alike: (1) a trend in gynecology to avoid minor lesions. (2) the revelations of bacteriology as to the bacterial origin of endometritis, causes the assumption of an infectious nature for any similar symptoms complex. The following case illustrates my contention:

Mrs. S., 23, newly married. Her menstrual periods had always been regular, lasting only five days. She became pregnant and passed through a protracted confinement with a puerperium which, though free from fever, was not ideal. Subsequently, her periods lasted eight to nine days and were accompanied by a profuse leucorrhea. Endometritis was diagnosed and patient continued so for four years, when she again became pregnant. Her confinement was easy and natural, her puerperium satisfactory, except for a continued colored discharge lasting for eleven weeks. Ten days after its cessation, it returned, lasting two weeks. Her periods now continued for ten days, yet she became a third time pregnant. Thus her condition was attributed to chronic endometritis, in spite of the fact that she never had any inflammatory disturbance, nor any sign of infection, and no possible irritation by local medication.

Fortunately it is more and more now recognized that many conditions still termed endometritis are non-infectious. Such conditions we meet with as the French "Métrite des vierges" or in German authorities as "Essentrelle Blutungen." While imperfectly understood, these conditions are excellently reviewed by Fothergill. The basis for his conclusions rest to a large extent upon an early article by Dr. Donald, "Chronic Endometritis and Metritis in Virgins," which I must briefly outline. Dr. Donald reports some forty cases of such conditions in women where all possibility of infection or neoplasm was excluded by selection, *viz.*, all were virgins with history of no operative interference, etc. His study, resulting in the following three groups of cases, prove that the conditions were non-inflammatory: (1) With small cervix,—acute anteflexion or retroflexion. Small corpus, which, under ether, is found to be slightly enlarged and elongated. There was often stenosis; (2) with ordinary cervix, a large and heavy corpus, either anteverted to excess or retroverted; (3) hypertrophied cervix with cervical catarrh. He found pain in lower abdomen in 36 cases; dysmenorrhea in 33; leucorrhea in 31; and menorrhagia in 16. Microscopical examination of curettings obtained generally revealed the utricular glands of normal structure, but increased in number; the interglandular tissue swollen and oedematous, but poor in cellular elements, or else normal; occasionally the interstitial tissue showed more fibrous tissue than normal. The vascular structures usually presented no marked changes. Hence his conclusion was a general hypertrophy of the uterine mucosa.

This form Donald has styled idiopathic endometritis or benign adenoma of the endometrium. Such cases have been reported by Donald, Walls, and Ostrom. It was first suggested by Sinclair that these hypertrophic conditions of the endometrium resulted from defective development of the uterine muscle.

Theilhaber, who stands preëminent amongst German research workers in this line, points also to the common diagnosis of chronic endometritis in cases of excessive bleeding and leucorrhea without obvious cause. This diagnosis of primary endometritis, he believes to be erroneous, its real nature being hypertrophy secondary to a primary lesion of the mesometrium. Similarly, chronic metritis is generally believed to be an inflammation of mesometrium secondary to infective inflammation of the endometrium. He holds that in the majority of cases of metritis there is no primary inflammation of the endometrium but rather a primary defect of the uterine muscle with secondary hypertrophy of the endometrium.

Basis for this belief is worked out on the fact that uterine contractions play a great part in regulation of the pelvic circulation. As inefficient and infrequent muscular contraction may give rise in people who stand a great deal, to varicose ulcer, so with insufficient uterine contractions we may have a resultant venous stasis and consequent overnutrition, and hypertrophy of the endometrium. This muscular inactivity may be especially marked during menstruation, when the pelvis is already congested. Thus we may have the periods prolonged, and an intermenstrual leucorrhea.

Normally, the uterine musculature develops in physiological relation to the vascular element. In the child's uterus only one-third the tissue is muscle, and the blood vessels are narrow and thin walled; the remainder is connective tissue. Towards puberty, the muscle and vessels begin to increase; the connective tissue becomes less and less in amount, until at the age of 10-20, when menstruation is usually established, the uterus contains twice as much muscular as connective tissue. In the healthy woman, who remains unimpregnated, these proportions remain until about 40 years of age. When a pregnancy intervenes, the muscular and connective tissue both increase rapidly to the time of parturition, then quickly fall back. The uterus remains larger after each successive labor, but this is due to a relative increase in connective and not in muscular tissue, since the involution of connective tissue does not proceed to the same degree as that of muscular tissue. The weight of an average multiparous uterus is 35-40 gms., while that of the average parous organ is 60-70 gms. Another change begins some years before the last menstruation; the uterine muscle fibres atrophy, vessel walls thicken, the lumina being lessened by a sort of physiological arteritis obliterans, the amount of connective tissue increases. When menstruation ceases, the process is not complete, but continues until at 60 years of age, the muscle, as at childhood, forms one-third of uterine tissue. Theilhaber has a curve to illustrate this process of evolution.

We are now in a position to appreciate the clinical conditions which may arise from the muscular inefficiency above spoken of. After puberty menstruation may be excessive and metrorrhagia may persist, due to the fact that muscular development has not kept pace with vascular development. Curettings at first show a normal, but finally an hypertrophied mucosa. Again at the climacterium we get a good deal of muscular atrophy, which is accompanied normally by stenosis of vessels and lessening of blood stream. If the vascular change be delayed, we get venous stasis and engorgement, and hence hypertrophy of connective tissue, giving a chronic metritis and endometritis, characterized clinically by metrorrhagia and leucorrhea. Frequent parturitions may eventually produce a similar condition, resulting in subinvolution which, according to Theilhaber, is an exaggerated muscular atrophy during the puerperium, followed by hypertrophy of connective tissue, and not, as generally taught, an incomplete physiological postpartum atrophy of uterine muscle. In fact, it is superinvolution plus hypertrophy of connective tissue. A similar muscular inefficiency, due to degenerations, may account for the metrorrhagias so common in chlorosis, phthisis, and the acute infections.

The later microscopic researches of Dr. Anton Meier, in some 61 uteri, determine the relative percentages of muscular and connective tissue at varying ages (5 months to 75 years). His results corroborate Theilhaber's clinical curve, establishing beyond question the influence of parturition, age, and the menopause. Lorentz investigated nine uteri removed on account of intractable hemorrhage and found thickening of the wall, numerous large vessels, with microscopic increase of connective and decrease in muscular tissue.

Theilhaber, in summing up his own work and that of Meier, proposes two forms of endometritis, (a) primary endometritis with or without secondary mesometritis; (b) primary disease of mesometrium with or without secondary hypertrophy of the endometrium. Under (a) come infective conditions of the endometrium, as gonorrhea, puerperal fever, tubercle bacillus, etc. Under (b) come hypertrophy of the virgin uterus, muscular degenerations from general diseases, uterine fibrosis following diseased appendages, subinvolution, change in fibroids, and senile uterine changes. Of course, you may have inflammatory changes in any uterus, along with the results of muscular inefficiency. Donald's cases prove beyond question the existence of these non-inflammatory conditions. In the light of Theilhaber's work, the term endometritis should be reserved for infectious conditions and not applied to every case presenting leucorrhea and menorrhagia.

Differential diagnosis of endometritis is of interest and importance chiefly as to the question of early malignancy. With carcinoma we have hemorrhage, discharge and often pruritus vulvae. The character of the hemorrhage differs greatly from that of endometritis; it begins with a greater or less leakage, usually first noticed after sexual intercourse and defecation. There may be only a slight staining of a continuous leucorrhea; there may be only prolonged menstruation or continued flowing after the climacterium. Rarely is hemorrhage profuse, and no relation exists between the quantity of blood lost and between the loss of strength. The discharge is watery in character at first and of offensive odor, and as ulceration advances, we get mixture with blood, pus, broken down tissue, feces, etc. Pruritus vulvae often results from the irritating discharges. In endometritis, the hemorrhage is usually intermittent and profuse in character, not preceded by leakage. It usually bears more or less relation to the menstrual periods. Discharge is usually of mucoid or purulent character with less disagreeable odor. Vaginal examination at once reveals the hard, nodular infiltrations and the "crater-like" vagina, etc., of carcinoma. The importance of an early diagnosis of malignancy cannot be too strongly insisted upon, as the hope of cure by radical operation depends wholly upon it. Hence, we must, in every case of menstrual excesses, or of irregular uterine hemorrhage, take the precaution of an early microscopic examination of curettings, or of excised portions of the cervix in trachelorrhaphies; for only upon such a measure can a positive diagnosis of malignancy rest.

In this connection, the work of Cullen is especially valuable. He insists that, in examination of such tissues, we note whether there is any dipping down of the squamous epithelium on the vaginal portion of the cervix; whether finger-like masses protrude; is there loss of substance on the cervical surface, or any round-celled infiltration of stroma; are the glands normal in number, and are they lined by one layer of epithelium; do they invade the deeper cervical tissues. In his work, Cullen points out cases of endometritis which present suspicious signs of early malignancy. Thus he instances swelling of the surface epithelium with proliferation to five or six layers, the individual cells being swollen and containing pale staining nuclei. He cites six or seven such cases with no evidence of nuclear division nor any tendency of epithelium to invasion of the underlying tissues. In one case there was proliferation even to five or six layers of lining epithelium accompanied by the formation of several new gland structures lined by a low cuboidal epithelium with enlarged lumina. In true carcinoma the glands are usually smaller, the epithelial cells cylindrical, closely packed together and stained deeply, also invading the underlying tissue.

Bibliography.

Ashton: Practice of Gynecology, p. 425, third edition.
Dudley: Diseases of Women
Hust: Textbook of Diseases of Women.
Pope: Endometritis. Am. Jour. Clin. Med., 1906, Vol. xiii, pp. 339 *et seq.*
Abel: Gynecological Pathology.
Roberts: Pathology of Gynecolgy.
Fothergill: Some Recent Work on So-Called Ch. Metritis and Endometritis. Practitioner, London, lxxii, p. 439.
Ostrom: Chronic Metritis and Hyperplastic Endometritis. New England Med. Gazette, Vol. xlii, p. 147.
Donald: Chronic Septic Infection of Uterus and its Appendages. Jour. Obst. and Gyn. Brit. Empire, Vol. xi, 1907, p. 113
Theilhaber: Die Variationen im Bau des Normalen Endometrium und die Chronische Endometritis. Münch. Med., 1907, liv, p. 1126.
Cullen: Cancer of the Uterus.

Appointment of Dr. Richard A. Berry.—Announcement has been made that Dr. Richard A. Berry, professor of anatomy in the University of Melbourne, has been appointed Stewart lecturer in that university for the year 1921. In conjunction with Mr. S. D. Porteus, director of the research laboratory of the training school at Vineland, New Jersey, Professor Berry recently issued a report describing a practical method for the diagnosis of mental deficiency and other forms of social inefficiency. He will consider this subject in his Stewart course.

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OBSTETRIC MORTALITY IN MASSACHUSETTS.

A month ago the Journal in an editorial article called attention to the increasing death rate in childbirth, to the increase in puerperal septicaemia, and expressed the opinion that the condition of obstetrics in the State should not be tolerated. Exception has been taken to this opinion. Exception has further been taken to the inclusion of statistics of 1918 because of the influenza epidemic of that year.

The Journal does not question the obstetric skill of many physicians, but it does feel it a duty to lay before the medical profession again and in more detail the facts regarding the deaths due to pregnancy and childbirth throughout the State.

The annual average death rate from diseases of pregnancy and labor per 10,000 deliveries calculated on a three-year average is shown below. Alongside the figures for the State have been placed figures calculated on the same basis for the Boston Lying-In Hospital Out-Patients. The steady increase for the State makes a very striking contrast to the decline for the patients of the Lying-In Hospital.

	Massachusetts	Out-Patient Dept., Boston Lying-in Hospital
1901-1903	38	16
1904-1906	42	19
1907-1909	45	8
1910-1912	49	8
1913-1915	51	4
1916-1917*	59	6

* Two years only.

That later statistics are not going to be better is indicated by the fact that the number of deaths of mothers per 10,000 births and still births in Boston was 63 in the first half of 1919 and was 88 in the first half of 1920. Among the out-patients of the Boston Lying-In Hospital in 1919 the death rate per 10,000 was eight (one in 1232 and that due to influenza).

These figures are laid before the medical profession. They are taken from the Report of Vital Statistics of Massachusetts for 1917, pp. 122-125, and from the reports of the Boston Lying-In Hospital. The late figures are from the Monthly Bulletin of the Health Department of Boston for June, 1920. If they "contain an indictment of the whole medical profession" the Journal agrees that "it behooves those of the profession in any way interested to ask for an honest, impartial and scientific inquiry into the condition of obstetric practice in Massachusetts." That was the purpose and aim of the first editorial article to which reference has been made. The Journal is of the opinion still that the death of one mother in one hundred and fourteen in the city of Boston in the first half of the current year indicates a condition of obstetric practice which is intolerable. The facts are available to the public: can the medical profession afford to ignore them?

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THE INFLUENZA EPIDEMIC IN ENGLAND.

The latest statistics issued by the Registrar-General on the influenza epidemic in England lead us to appreciate more fully than ever the insidiousness of that disease. With the single exception of the cholera epidemic in 1849, the mortality rate attributed to influenza during 1918-1919 is the highest rate recorded for any epidemic in England since registration was first begun in that country. During 1918, deaths allocated to influenza numbered 112,329, of which 53,883 were among males and 58,446 were among females. Deducting the 7,591 non-civilians included in the males, the deaths of civilians corresponded to a mortality of 3,129 per 1,000,000 civilian population. None of the previous outbreaks of influenza can compare in mortality with that of 1918-1919. During the forty-six weeks from June 23 to May 10, the total number of deaths attributed to the disease was 151,446, including 140,989 of civilians, the corresponding civilian death-rate for the forty-six weeks being at the annual rate of 4,774 per 1,000,000 population. Nor does the mortality attributed to influenza in all probability represent the total number of deaths caused by it, for allowance must be made for increases in mortality allocated to respiratory and other diseases but really attributable to influenza. When, for example, pneumonia, bronchitis, heart disease, and phthisis are included in the female mortality rate, deaths attributable to the epidemic during the third quarter of 1918 were 7,741, and during the fourth quarter, 62,240; the figures for males during the same period were 8,088 and 51,339 respectively.

It is interesting to observe that whereas in earlier years the mortality rate for influenza in England has been lower under the age of fifty-five years and higher above it, in 1918-1919 this was distinctly reversed; those under thirty-five died in great numbers, while those over fifty-five seemed to be relatively safe, although to all appearances the influenza of 1918 was essentially the same as that of former years. It would be difficult to find in the history of any other disease so complete and sudden a change of incidence. The opinion is expressed in the Registrar-General's report that although the alteration in the circumstances of the population, as in the case of the aggregation of young women in munition works in 1918, may account in part for the change in mortality incidence, it is more preferable that the explanation be found in a sudden change in the infecting organism rather than in the soil provided for its growth.

FIRST REGIONAL HEALTH CONFERENCE IN WASHINGTON IN DECEMBER.

THE first of a series of regional health conferences authorized by the International Health Conference at Cannes is to be held in Washington, D. C., December 6-13, 1920. It will be devoted to a consideration of venereal diseases which, according to conservative estimates, constitute one of the world's most terrible plagues.

The conference is being organized under the joint auspices of the U. S. Interdepartmental Social Hygiene Board, the U. S. Public Health Service, the American Red Cross and the American Social Hygiene Association. Professor William H. Welch of Johns Hopkins has consented to serve as president, and already assurances have been received that some of the foremost physicians and sociologists will participate. Prominent health officers and sociologists from all parts of North and South America will attend.

The conference will review past experiences and existing knowledge as to the causes, treatment and prevention of venereal diseases, and will formulate recommendations relating to a practicable three-year program for each of the North and South American countries participating. In addition it will make suggestions for putting such programs into effect.

In speaking of the proposed conference, Surgeon-General Hugh S. Cumming, of the U. S. Public Health Service, has said, "The United States is in the front rank of the countries which have organized against the Great Red Plague, and a consideration of the various measures which have proved of value in different communities will undoubtedly contribute much to further progress in the countries represented at the conference. More than any other important communicable disease, the spread of the Great Red Plague is inextricably bound up in a mass of social, economic, educational and recreational problems. The success thus far attending the campaign against the venereal diseases is due largely to the fact that this interrelation has been recognized and that the campaign has enlisted the coöperation not only of physicians and sanitarians, but of sociologists, judges, probation officers, educators, the clergy and good citizens generally."

MEDICAL NOTES.

Honorary Election of Dr. John G. Adami.—Dr. John G. Adami, vice-chancellor of the University of Liverpool and formerly professor of pathology and bacteriology in McGill University, has been elected to an honorary fellowship in Christ's College, Cambridge.

Deaths from Childbirth or Pregnancy in England and Wales.—The following statistics relative to deaths due to pregnancy or childbirth in England and Wales have been published in the *British Medical Journal*:

"During 1918 the number of deaths assigned to pregnancy or childbirths was 2,509, corresponding to a rate of 3.79 per 1,000 births. If the classification be adopted which was in use up to 1910 there must be deducted from this number 156 deaths, which with one exception were allocated to puerperal nephritis and albuminuria; the mortality thus calculated is reduced to 3.55 per 1,000 births, as against an average of 3.74 in the ten years immediately preceding and 3.66 in 1917. If 2,529 deaths from enteric fever, malaria, influenza, pulmonary tuberculosis and other conditions stated to have been caused by or associated with pregnancy and childbirth be included, the proportion is raised to 7.6 per 1,000 births—a figure greatly in excess of those of previous years, which ranged from 1908-17 from 4.77 to 5.27. For this sudden inflation of a stable mortality influenza was wholly responsible; in connection with pregnancy or childbirth 1,620 more deaths took place from influenza and 225 more from pneumonia than during 1917. Of the 2,509 deaths assigned to pregnancy 54 were attributed to hemorrhage of pregnancy, 137 to placenta praevia, and 184 to other puerperal hemorrhage. Among other 'accidents of childbirth' to which deaths were attributed were: contracted pelvis, 35; Caesarean section, 19; rupture of uterus, 16; and inversion of uterus, 8. Under the heading 'Puerperal Fever' (845 cases) 478 deaths were ascribed to septicemia or sepsis, 98 to peritonitis, 21 to pyemia, 19 to pelvic cellulitis, 16 to septic phlebitis or septic thrombosis, and 7 to pelvic abscess. Deaths ascribed to puerperal convulsions numbered 388.

Brazilian Hospital in France.—The Paris Faculty of Medicine has accepted the offer made by the Government of Brazil of the hospital installed by Brazilians in Vangirard, France, at the cost of two million dollars.

Proposed Institute of General Pathology and Preventive Medicine in Oxford.—An appeal for funds is soon to be issued by the committee which plans to erect an Osler Institute of General Pathology and Preventive Medicine in Oxford, in commemoration of the services of Sir William Osler in Canada, the United States, and England. There are included in the committee representatives of the universities of Aberdeen, Birmingham, Bristol, Cambridge, Durham, Edinburgh, Glasgow, Leeds, Liverpool, London, Oxford, Sheffield and Wales, and also of the Royal College of Surgeons and Physicians, of the Faraday Society, of the British Association, and of the British Academy.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending August 21, 1920, the number of deaths reported was 175 against 174 last year, with a rate of 12.19 against 11.39 last year. There were 46 deaths under one year of age against 32 last year.

The number of cases of principal reportable diseases were: Diphtheria, 26; scarlet fever, 6; measles, 5; whooping cough, 33; typhoid fever, 2; tuberculosis, 41.

Included in the above were the following cases of non-residents: Diphtheria, 2; scarlet fever, 1; measles, 1; tuberculosis, 5.

Total deaths from these diseases were: Diphtheria, 2; whooping cough, 6; typhoid fever, 1; tuberculosis, 6.

Included in the above were the following non-residents: Diphtheria, 1.

Infantile paralysis: Cases, 13; deaths, 3.

Bequests to Hospitals.—By the will of the late Daniel Dole Adams of Newbury, it has been provided that after the death of his wife the sum of $10,000 is to be given to both the Anna Jaques Hospital at Newburyport and the Homeopathic Hospital at Newburyport. The income of these funds is to be used for maintaining a free bed.

NEW ENGLAND NOTES.

War Relief Funds.—New England branches of war relief funds have announced the following contributions:

French Orphanage Fund	$614,344.80
Russian Refugee Fund	35,864.81

Correspondence.

[The following letter has been sent by the author to each of the Electors of the Hall of Fame.]

DR. MORTON IN THE HALL OF FAME.

Boston, June 18, 1920.

To the Senate of the University of New York.
University Heights, New York, N. Y.

Gentlemen:

Previous to October 16, 1846, surgical anesthesia was unknown. Hitherto surgical operations had been mental and physical torture to the patient as well as to the surgeon. Those unfortunate persons about to undergo an operation were plied with opium, alcohol and other drugs, restrained by attendants, bound to a chair, or lashed to the operating table. The operating rooms in the hospitals were located in the cupola, or as remote as possible, in order that the inmates of the institution might not be disturbed by the shrieks and groans of the sufferers. In consequence thereof, operations were comparatively infrequent, suffering was rampant and lives were unavoidably sacrificed. It is simply impossible for the present generation to realize or to comprehend the management of surgical cases in those days.

Upon that epochal Friday morning in 1846 these dreadful conditions were radically and permanently changed by the introduction of anesthesia. Painless surgery, as we know it today, was successfully demonstrated upon that occasion for the first time in public at the Massachusetts General Hospital in the presence of a representative assembly of physicians and students. At the conclusion of the operation, the surgeon, Dr. John Collins Warren, remarked to the intensely interested audience, "Gentlemen, this is no humbug!"

From that moment painless surgery became an established fact. Other operations, equally successful, speedily followed, and in a short time the great discovery was known and in use all over the civilized world.

The man who gave the anesthetic upon that memorable occasion at the Massachusetts General Hospital was Dr. William Thomas Green Morton. He had experimented with sulphuric ether, had demonstrated its safety and efficiency in dentistry, and sought an opportunity to show its efficiency in general surgery. He assumed the sole responsibility of the demonstration. The results, whatever they might be, rested upon him. His enterprise, his enthusiasm, and his courage brought success. Whatever suggestions or assistance he may have received from others, he was *the* man who made anesthesia a practical, everyday blessing to mankind. The one fundamental fact to be borne always in mind is that previous to Dr. Morton's demonstration of anesthesia, surgical operations were attended by indescribable agony, mental and physical; that afterwards, and as a direct result of the demonstration, they were, and always will be, accompanied by hope and comfort. To him belongs the credit of this great discovery. No man has done as much for the relief of the suffering of the human race.

The medical profession appreciated the importance of Dr. Morton's great service to humanity as no other class in the community is able to do, and the writer begs leave to suggest that his name be found worthy of a place in the Hall of Fame in New York by your honorable body.

Very respectfully.
Your obedient servant,
GEORGE W. GAY, M.D.,

Senior Surgeon, Boston City Hospital.
Ex-President, Massachusetts Medical Society,
Member of British Medical Association, etc.

FIRST AID TRAINING.

August 9, 1920.

Mr. Editor:

Permit me to present to you my most emphatic protest against any such article as appeared in your August 5 issue, entitled "The Increasing Need for First Aid Training" as being suggested by the Red Cross Society and endorsed by you.

As a class our business interests are left to take care of themselves in a manner never found in any other calling. We are being invaded on every hand by what I call "short cut" pirates—osteopaths, chiropaths, "healers" of numerous cults, and now you suggest the need of "first aid" helpers or what not. Pardon me, as one well versed in the affairs of village and country practice—no "armchair" experience either—if I say there is no need, increasing or otherwise, for such "first aid training" in our state as you suggest. True, physicians are leaving small towns and communities where once they labored, and in many cases there is a good and sufficient reason for it, but in these days of rapid transit via the automobile, these towns are more readily reached and served than they were in the days of the horse. Such a move as you endorse also has another dangerous feature in that it would be the entering wedge that would eventually destroy what "medical registration" laws we now have.

The bricklayer, the steamfitter is wiser in his generation than we. He guards the apprenticeship to his trades with jealous eye, admitting none until he feels him to be fully competent.

I am also in hearty accord with the article in the same issue on the administration of ether by *physicians only*. It seems to me your duty and mine is to protect the interests of the most obscure but reputable physician wherever he is found in this Commonwealth. Look over the lists of "first aids" already legalized in this state and see where it has taken the bread out of the mouths of our hard-pressed physicians. The list is too long to tire you with, but I feel sure it is well known to you.

I am not writing for publication but to enlist your interest in the men who largely support your JOURNAL. Get nearer to them in your work.

Sincerely yours,
GEORGE W. ELLISON.

THE NEED OF PROVISION FOR PRIVATE PATIENTS IN STATE AND MUNICIPAL HOSPITALS.

Boston, Aug. 18, 1920.

Mr. Editor:—

In these perplexing days, for our very rich and our very poor a fair hospital provision is made. For no less than fifty dollars a week can an acutely insane patient be cared for by private corporations or individuals. A very poor patient can receive in one of our public institutions the best care the state can provide with the amount of money at its disposal for this purpose. In some of the institutions a few dollars a week extra can be received and extra food, especially fruit, provided. At least, the disposition of these two classes of cases is fairly definite. There exists little perplexity in answering the question as to what shall be done with them.

In regard to our great middle class, our most responsible, honest, and intelligent people, the hope of our nation and the world, the situation is not clear. Too honorable to accept for themselves or those for whom they feel responsible free treatment, and too proud to be objects of charity, they try one of two equally disastrous plans: they keep their relatives at home or send them to private institutions. Soon they are worn out or their funds exhausted. Instead of one patient in a family, there may be several and then, at a most uneconomic time, the state hospital is the resort. We should and could, if we would, do our duty toward this class of citizens.

In Germany before the war and in England today, there exists the provision which in earlier days we had in Massachusetts: a provision whereby self-respecting individuals might pay what they could and not be pauperized. If it is possible for the city and state to care for free patients, and for private hospitals to care for patients able to pay the necessarily increased prices, it is certainly possible for state and municipal hospitals to provide the essential care at the lowest possible rates for patients needing such care. It requires merely thought and adjustment to bring such provision about. There was much that was good in the better insane hospitals of Germany with their seemingly undemocratic classification, for, although there were often external appearances of inequality in favor of patients paying higher prices, the essentials of treatment needed for recovery or improvement were in most cases the same. There was less injustice in preventing those able and willing to pay a reasonable price than there is among us today.

Why would it not be beneficial to thus legitimately increase the hospital budget, thus allowing a greater number of better paid doctors and nurses? Do not the private departments of our large hospitals serve to keep up the grade and benefit the public as well as private patients, while the wider experience gained by doctors and nurses from contact with public patients act beneficially to the private cases?

This applies not alone to our insane hospitals, although here conditions make the need more imperative; acutely insane patients must for proper treatment have the accommodations of large hospitals or pay very high prices. There are many chronic cases too difficult to be properly treated in inexpensive private hospitals or nursing homes, so called. Should there not be provision for private patients in our municipal infirmaries? Would this not create a greater interest in such institutions on the part of our intelligent citizens?

I would not belittle the position of the private hospital or deny its usefulness in the community and I would especially commend the personal touch with the patient which in many cases is invaluable. However, the private hospital, like the private school, will never get to the root of our problems. It will always be for the few. For the good of the many we must make the best provision we can for adequate care with properly paid and not overworked doctors and nurses, possible for the many without undermining their independence, at least until such a time as that when an evolution of the medical world shall make such provision unnecessary. **Mabel D. Ordway, M.D.**

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PSYCHICAL RESEARCH.

Boston, Aug. 24, 1920.

Mr. Editor:—

My protest against Dr. J. Danforth Taylor's attitude toward psychical research has been registered. I have no desire to discuss with him either privately or publicly the subject of spiritualism, first, because of the very complex nature of the evidence, involving as it does many other supranormal phenomena, and second, because the profession would not be interested in our personal opinions. What should interest every physician and every man who thinks at all, is the opinions of such a large body of scientific men who have undertaken a *scientific* investigation of the whole subject. To their interpretation of this mass of evidence the medical profession should give respectful attention.

I did not see G. Stanley Hall's criticism of Sir Oliver Lodge and I do not remember reading anything from Newcomb one way or the other. Their opinions would have weight with me,—as have the conclusions of other men of science, like Sir William Cookes, Alfred Russell Wallace and a host of others,—that the "stream of consciousness does persist." This is my last word on the subject.

David W. Wells.

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SOCIETY NOTICES.

National Anaesthesia Research Society.—The National Anaesthesia Research Society will hold its first annual meeting at Pittsburgh, on October 4 to 8, with headquarters at the William Penn Hotel. The meeting will be in conjunction with the Interstate Anaesthetists Society, the Western Pennsylvania Odontological Society, and the Medical Society of the State of Pennsylvania.

New England Surgical Society.—A meeting of the New England Surgical Society will be held on October 6 and 7 in Providence, Rhode Island.

Franklin District Medical Society.—Combined Meeting with Hampshire District Medical Society.

Change of Program:

South Deerfield. Lathrop Hotel, Tuesday, September 14. Ball game at 2.30 P.M. Paper at 4.30 P.M. by Dr. W. R. MacAusland of Boston: "Arthritis from an Orthopedic Standpoint." Supper at 6.30 P.M.

F. A. Millett, Sec.

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RECENT DEATHS.

Dr. Albert Johann Hahn, a practitioner of Plattenburg, N. J., and a Fellow of the Massachusetts Medical Society, died at Sharon, Vt., Aug. 1, 1920, aged 67 years. Dr. Hahn was born in Germany, Oct. 4, 1852; from 1880 to 1885 he was professor of medical chemistry and toxicology at the College of Physicians and Surgeons, Boston, in 1882, receiving the degree of M.D., from that college. In 1885 he was graduated from the Dartmouth Medical School and joined the Massachusetts Medical Society, soon settling in Newark, N. J., and later moving to Plattenburg where he had practised since.

Dr. Walter Wesselhoeft of Cambridge, Mass., died at his home at Shawme Hill, Sandwich, Mass., Aug. 17, 1920, aged 83. Dr. Wesselhoeft was born in Weimar, Germany, Aug. 29, 1838, the son of Robert and Ferdinanda Emelia Hecker Wesselhoeft. He was educated at the universities of Halle and Jena, entering Harvard Medical School in 1856 and being graduated in 1859. He settled in practice at Halifax, Nova Scotia, where he married Mary Fraser of that city in 1868. She died in 1886, leaving him with seven children. In 1894 he married Mary Alford Leavitt of Cambridge, who, with the seven children, survives him. During the Franco-Prussian War Dr. Wesselhoeft was surgeon in temporary reception hospitals at Mannheim, Germany, and at Prague and Vienna. After 1872 he practised in Cambridge, Mass.; from 1873 to 1900 he was professor of clinical medicine at Boston University School of Medicine, and then professor emeritus until his death. He was a trustee of the Massachusetts Homeopathic Hospital, a member of the American Institute of Homeopathy, the Massachusetts Homeopathic Medical Society, as well as corresponding member of the British Homeopathic Society, and the Homeopathic Society of Mexico.

During his lifetime Dr. Wesselhoeft joined his brother, Dr. Conrad Wesselhoeft, in trying to promote harmony between the homeopathic practitioners and regular physicians. He was a very accomplished man, of the Unitarian religious faith. For many years he was editor of the *New England Medical Gazette*, a position later filled by his son, Dr. Conrad Wesselhoeft, a practitioner of Boston who served overseas during the Great War, with the Twenty-Sixth Division.

The Boston Medical and Surgical Journal

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The Massachusetts Medical Society.

MEETING OF THE SECTION OF TUBERCULOSIS, JUNE 8, 1920.

THE VALUE OF A COUNTY TUBERCULOSIS SURVEY WITH CLINICS.

BY MISS BERNICE W. BILLINGS, BOSTON.

Director of Public Health Nursing, American Red Cross.

Massachusetts Surveys without Clinics. During the years 1917 and 1918 the Massachusetts State Department of Health and the Massachusetts Trustees of Hospitals for Consumptives made official surveys in the cities of New Bedford and Cambridge in relation to the Subsidy Act of 1917. A rural survey was made by the State Department of Health in Barnstable County in April, 1918, for the purpose of locating patients for the newly opened County Hospital. There was no special clinic service connected with these surveys and it was, therefore, impossible to present a report which included the medical findings regarding a large number of suspicious and contact cases, which were visited during the progress of these studies. In Barnstable County practically all the physicians were visited in an effort to obtain data on tuberculous and suspicious cases. Several physicians affirmed that, although a patient had many symptoms of tuberculosis, it seemed unwise to report the case as tuberculosis, when repeated sputum examinations were found to be negative. These surveys showed that a large number of patients left their own physician after a diagnosis of tuberculosis had been made. The patients drifted from one physician to another, without follow-up work and when finally convinced the illness was tuberculosis, it was often too late to obtain an arrest of the disease.

Contents of the Survey. Experience such as this should convince a committee, interested in making a tuberculosis survey and anxious to obtain results, that a plan should be made which would combine the following:

a. Preparation of records.
b. Supervised field nursing.
c. Free clinics with expert medical advice.
d. Accurate report of existing conditions.

Oneida County, N. Y., Tuberculosis Survey. In May, 1919, a conference was held between representatives of the New York State Department of Health, the State Charities Aid Association and the Oneida County Tuberculosis Committee to consider the advisability of making a tuberculosis survey of the county under the joint direction of the State Department of Health and the Oneida County Tuberculosis Committee of the State Charities Aid Association.

This was acted upon favorably and a tuberculosis survey, with clinics was conducted during the summer and fall of 1919. Oneida County is located in central New York State, with an area of 1200 square miles and an approximate population of 174,000 persons. There are two cities: Utica, with an estimated population of 96,000, 50% being foreign born or of foreign born parentage; and Rome, with a population of 28,000, with 26% foreign born or of foreign born parents. The remaining 50,000 are located in the small mill towns and rural sections of the county. The principal industries in the two cities are the manufacture of knit goods, men's clothing, fire arms, machinery, foundry and metal works, comprising important brass, copper goods and wire; while in the rural sections there is the manufacture of knit goods, iron and paper, textile mills, bleacheries, canning factories, farming, dairying and lumbering.

Facilities for Care Previous to Survey. The facilities for the care of tuberculous patients in this county were as follows: The New York State Sanatorium at Ray Brook, Saranac Lake, for the care of early cases of tuberculosis; and the County Hospital, Rome, New York, for advanced cases.

Utica was provided with a clinic two mornings each week, with an average attendance of 4.55 during the year previous and a tuberculosis nurse under the local Board of Health. Camp Healthmore is open six months each year for the care of suspicious and early cases of tuberculosis. The city is also provided with two open air rooms and one open air school.

There was no tuberculosis clinic in Rome. The local Board of Health employed one nurse who divided her time between child welfare, venereal disease, and tuberculosis nursing.

The rural sections of the county were not provided with clinic service and with exception of one town had no local public health nurse. In September, 1919, a county nurse was appointed to do tuberculosis follow-up work.

Utica. The preliminary work for the survey was started in the latter part of May and a card catalogue was prepared of all known cases of tuberculosis since the disease became reportable in 1908 and of all deaths from January, 1914. Four nurses were engaged in the field work which commenced in Utica in June. In connection with this, three clinics were held in Utica in July and August. The examining physicians were specialists in tuberculosis and were located outside the county. Wide publicity was given this work and it was emphasized that specialists would be present to make examinations. This information reached the public through the following channels: Local Boards of Health, local physicians, the press, churches, moving picture houses, and all industries by means of posters, pay enevelope slips, and noon-day talks. Also, through the Temple of Labor and all clubs, such as Rotary, Kiwanis and women's clubs and in the rural sections, through the schools. These agencies, together with home visiting by the nurses, reached thousands of people. This advertising was so thorough that the work became familiar to practically every one in the county. On the first and second of July the first clinic was held. At this time 180 persons were examined and many turned away. There were three examining physicians and, although the clinics were supposed to close at 9 P.M., the waiting list was so long and the people who came were so patient and anxious to see the "Great Doctors" that the physicians remained until nearly midnight, examining and advising.

At the close of the Utica study 461 persons had been examined at these special clinics. Of these 101 were tuberculous, 157 suspicious, and 209 negative cases. Thirty-two of the positive cases had not been registered with the local Board of Health previous to the clinics. A complete detailed report of the findings from each clinic was sent to the State Department of Health and local Board of Health. This included names and addresses of all persons examined, together with diagnosis and medical advice. A brief report of each clinic was, also, sent to all the county papers, both English and foreign and it was found that these reports were very generally read.

Rome. The preliminary work in the city of Rome and in the rural section of the county was carried out in an equally thorough manner. Two afternoon and evening clinics were held in Rome with an attendance of 165 persons. Of this number 38 patients, or 23%, were found to have tuberculosis. Twenty-three of these were unregistered cases.

Rural. Rural clinics were held in ten towns in the county. Five hundred and sixty-one patients were examined at these clinics with a total of 69 tuberculosis patients, 88 suspicious and 404 negative cases. Sixty-two of the 69 tuberculous patients were unregistered cases. The attendance at the rural clinics was uniformly good, averaging 56 patients at a clinic.

Clinic Centers. The clinics were held in a great variety of places, such as the Dispensary and Court House in Utica, and the Court House in Rome. These court houses made ideal centers for clinics, as they were each supplied with three examining rooms, dressing rooms and an excellent waiting room. The rural sections offered a great variety of places, such as town halls, club rooms and school houses. As a rule, it was possible to secure a group of three or four rooms, provided with the essentials of light, heat and running water. At one time, a record breaking attendance occurred in one of the mill towns when over 200 persons attended the clinic and the physicians were obliged to make examinations in a large ball room. An election screen was placed in each corner of the room and the physicians worked behind the screens. This was undesirable, as it was noisy, but the examiners accepted the fact that the clinic was located in the only available place in the town.

It was not uncommon for the nurse to arrive at the appointed place for the clinic a few hours ahead of the physician and patients and be obliged to do battle with the remains of various festivities which had previously occurred. This meant real sweeping, dusting, and occasionally helping to set up stoves, lighting the fires, etc.

Literature relating to tuberculosis, care of children and general public health was secured from the State Department of Health and from the various insurance companies in the county and was placed in the waiting room. A serious effort was made to make the patients feel that there was a real welcome awaiting each one.

Examples of Case Finding. The homes of 2796 persons were visited through the county in an effort to locate patients or their families and to urge patients, suspicious and contact cases to come to the clinics.

In the crowded sections of the city the home visiting became almost a house to house search for patients. The inquiries which were made by the nurse in regard to suspicious cases from the grocery man at the corner store in the city, or the housewife in the small town, brought amazing results, often locating active cases of tuberculosis. On one occasion a call was made at a cottage in the rural section of the county to advise the family that a specialist was coming to the town to examine for tuberculosis and to inquire if any one in the family would be interested to come. At this time the nurse noticed that a young woman in the family looked very thin and pale. During this brief visit it was learned that the woman was an attendant and had just come off duty. She was asked to come and see the clinic in operation. After visiting the clinic and assisting the physician, she was finally urged to submit to an examination. She was found to be a suspicious case. Following this an x-ray photograph was taken and the patient returned to a second clinic for reëxamination, at which time a diagnosis was made of incipient tuberculosis, and the patient entered a sanatorium for treatment. In another instance, the nurse took shelter in a house during a thunder storm and, in conversation with the family, learned that the woman next door was "sick with a cough." This potential case of tuberculosis was interviewed, came to the clinic and was examined, with a diagnosis of advanced tuberculosis. These two examples are typical of what is to be found in any section of the country, either city or rural, if the survey nurse is making a serious effort to locate consumptives.

Findings. At the close of the survey, it was found that there were 945 cases for follow up work: 467 were patients reported tuberculous from January, 1916, to December, 1919; 96 were reported previous to 1916; 336 were suspicious cases from the special clinics, and 46 were men exempt from the draft because of tuberculosis.

Of the more recently reported 467 cases, 59 patients were in sanatoria or hospitals while 408 patients were living at home. Seventy per cent. of these cases were under no medical supervision.

In the deaths which had occurred in Utica and Rome for the past three years, 50 patients had worked up to three months of death, 20 patients having been employed to within one month before death. Many of these patients had been ill for a period of from one to three years, and during that time had received little or no care.

Clinics. One thousand two hundred and eighty-seven persons were examined at the clinics from July 1 to December 19. The result of the examinations was as follows: Tuberculosis, 224 (of this number 117 were unregistered previous to the clinics); suspicious, 390; negative, 683.

Reports. The reports on Utica, Rome and the county were prepared separately and recommendations were made to the effect that:

a. Utica be provided with an evening clinic, a supervising nurse and three assistants.

b. Rome be provided with regular tuberculosis clinics and a follow up nurse.

c. The towns in the county be provided with regular clinic service and local public health nurses.

Copies of the reports of each city, together with the recommendations, were sent to the respective mayors and health officers and were simultaneously published in the newspapers. The county report was also published.

Results. The result accomplished was this:

a. The larger city made an appropriation for the salary of one additional nurse. This salary was augmented by private funds, so that a well-trained nurse might be employed, with the understanding that she supervise the tuberculosis work in the city, under the direction of the health officer.

b. In the smaller city, the County Tuberculosis Committee financed

1. The expenses of a Saranac Lake physisician who would hold afternoon and evening clinics every two weeks. This work was placed under the direction of the local health officer.
2. The salary of a well-trained, full time public health nurse to do tuberculosis work in the city under the direction of the health officer. An automobile was provided.

Continuous clinical service was provided for the rural sections of the county. A serious effort is now being made to urge the towns to employ local public health nurses who shall follow up all tuberculous patients. In the rural sections of the county it is perfectly practical to enlarge these tuberculosis clinics into generalized clinics. These services should be operated, when possible, by out-of-county experts.

This work does not interfere with the practice of the private physicians, but rather adds to this practice by referring patients for subsequent advice. Throughout the county the nurses received the heartiest coöperation from the health officers and physicians. In several towns the local health officer visited patients and urged them to come in to the clinics for examination. The examining room was often a very interesting sight, as the visiting examiners would have from one to four or five local physicians examining patients and talking over cases.

The approximate cost of this survey was $8,000, but it would appear to be a modest sum when it is remembered that 117 unregistered cases of tuberculosis were located for follow up work.

State Departments of Health, local Boards of Health, private organizations engaged in tuberculosis work and private physicians should demand tuberculosis surveys as a preliminary to more intensive care of tuberculous patients. In conjunction with this, clinic service should be provided not only in the cities, but also in rural sections. Trained public health nurses must be employed to prepare for clinics and to follow up the patients.

A detailed report should be made of the survey findings, and this should be given widespread publicity in order to achieve results.

DISCUSSION.

Dr. Arthur K. Stone, Framingham Center: We are fortunate in having Miss Billings, who has had more experience in survey work than anyone else in this State, with us. She has taken part in four surveys—three in large cities of 100,000 inhabitants and one on the Cape district, and in addition this rural work in connection with her Utica work. The message she brings us is well worth our enthusiastic attention.

There are two varieties of surveys that come up; one, the group survey, if we may call it so, where a small group of people, or a committee, want to know what conditions are, preparatory to launching a campaign; and a general survey, such as we have had described, which is really for the benefit of the whole community. That is the one that we want to consider.

In order that it should be effective it must be conducted first of all perfectly honestly and straightforwardly, without the intention of "getting" any public official, but of telling the truth and facts to the people who are interested. If that is done, and the health officials are wise, and do not consider it a criticism on themselves, they will turn the survey to their own advantage in carrying out the things that they see they should have in their community.

The city of Cleveland has just had a very extensive survey made, not only in regard to tuberculosis but in regard to general housing conditions and health in industries, condition of their hospital, and so on. They imported Dr.

Haven Emerson, who was the Health Commissioner of New York for a time, to superintend the survey. His work was supplemented by a large staff that he drew from all over the country. At the completion of the survey, when the reports were all in, there was a grand mass meeting of the citizens of Cleveland interested in the subject and portions of the report and the conclusions were read, and, of course, appeared on the front pages of the newspapers. In Utica last year the success of Miss Billings' work was very largely due to the fact that it was advertised, as she has told you, in the papers, on the front page and in big type, and in the various languages in which papers were published.

Several years ago the State Department of Health and the Trustees of Hospitals for Consumptives conducted a survey of the city of New Bedford and at the end one of the members of the Board of Health published the conclusions in the local paper. This was very much to the annoyance, at first, of the energetic health officer of New Bedford, but after a short time he was made to see that it was simply backing up what he had been asking for for a number of years, and as a result of this work New Bedford has been put in a very enviable position. Probably no other city, with possibly the exception of Manchester, N. H., which has had a clinic which has been going up steadily in the last few years, has a clinic as good as the one at New Bedford. Almost every clinic in Massachusetts shows a run-down condition rather than a run-up condition. Manchester and New Bedford are the only two cities, to my knowledge, that have gone in the other direction.

I think that a large part of that work in New Bedford has been due to the enthusiastic carrying out of the suggestions made by the Department of Public Health through Miss Billings' survey.

Just at the beginning of the war a similar survey was made in Cambridge. Conditions much more to be criticized were found than had previously been found in New Bedford, but on account of the stress of war, influenza, and one thing and another, it never received any publicity and, so far as I know, the work of that survey has fallen absolutely flat. The Boston Tuberculosis Association at one time carried on a careful survey in one of the sections of this city. The result was to find a great many cases of tuberculosis, a great deal of unsuspected bad housing conditions, a large number of children uncared for, who were tuberculosis contacts. These conditions were put before the various local, medical and philanthropic organizations. At first, they were very much horrified. One or two of the clubs considered it at their meetings but it was all done privately; it never got into the papers. After mature consideration they decided that they could not do anything because it might affect the real estate in the neighborhood and might prejudice people from going to live in that part of the city. Nothing came of it.

The one point I want to emphasize in regard to Miss Billings' paper is that if a survey is made honestly and discloses undesirable conditions, in order to have any effect it must be given a lot of front page publicity.

Dr. Eugene R. Kelley, Boston: I do not know that I have very much to add in the discussion of this question. We have at the present time two great sources of regret in the tuberculosis campaign. There is a great loss of life, which I think anyone must say is partially preventable; then there is a great loss of money in the campaign as we are now carrying it on, because we are bringing the most expensive part of our anti-tuberculosis machinery, *viz.*, the institutional end of the work, to bear on the wrong end of the individual case. Everybody has got to concede that those are the two most glaring defects in the tuberculosis campaign of today.

I feel strongly that all persons interested in tuberculosis work ought to heed these two points that have been brought up—on the one hand, Miss Billings' point—taking account of stock—and the other, that Dr. Wagner will bring out—how to provide machinery to keep continuously in touch with the tuberculosis needs of the community. I feel strongly that at the present time these are the two great duties of the medical profession.

Miss Billings has brought out very clearly how well the average practitioner of central New York State responded to the opportunity of the clinic. It is my hope and belief that the physicians of Massachusetts generally will do the same. We have never yet gone about the matter of finding the tuberculosis cases in an intensive fashion. The plan that has been found so successful in these local surveys ought to be made state wide. There is a great stumbling block in the path of local city dispensaries. Dr. John Smith, a man in general practice, is rather interested in tuberculosis. He gives a certain amount of attention to it and becomes the attending physician at the dispensary. His brother physicians feel one of two ways—either they think John Smith does not know any more than they do therefore they have not anything to learn by sending a patient to him; or, if he does know something more about it, the chances are very great that attendance at a clinic on that basis will only lead to the aggrandizement of Dr. John Smith's practice and to the detriment of their own. This is one of the great difficulties at the present time as to attendance at our clinics.

I think that in order to make a definite effort to locate and follow up tuberculosis patients, the State and sub-divisions of the State, *i.e.*, County and City governments, ought to provide a type of expert consultation service that will not be a financial burden on the individual patient, because many of them cannot afford it. This service would not in any sense be detrimental or injurious to the private practice of the physicians of the town. One ultimate solution of that is an outside man who is of recognized professional standards, whether attached to an institution or not. I feel strongly that the Medical Society ought to put itself strongly in favor of that kind of a development. I do not believe anything else will ever solve it. Tuberculosis is a matter of a specialist's judgment in determining the diagnosis. I hope to see the Medical Society moving towards this end. It will cost some money to inaugurate such a medical service. I do not know just how much, but I think it will ultimately save money.

A Plea for a Department of Tuberculosis in Medical Schools.

By William J. Gallivan, M.D., Boston.

Director of the Department of Tuberculosis, Massachusetts State Department of Health.

There is a widespread feeling that the Government is not getting a satisfactory return on the money expended in its efforts to stamp out pulmonary tuberculosis. In this State it requires an annual appropriation of $800,000 to maintain the four state sanatoria. In addition to these sanatoria we have five county hospitals, 14 municipal hospitals and 53 dispensaries devoted to the care of tuberculous patients. A conservative estimate of the annual cost of caring for such patients in Massachusetts has been placed at $3,000,000. Add to this the original cost of site and buildings, the economic loss due to disability and death, and multiply this amount by the number of States in the Union, and we get a figure which staggers all thinking men. The return on this investment shows an annual death rate of 200,000 people.

The best minds in tuberculosis work place the failure to secure better results upon the delay or inability on the part of the general practitioner to recognize the signs and symptoms of early pulmonary tuberculosis. In a study of 500 cases of pulmonary tuberculosis in our state sanatoria, 75% of whom were classified as moderately advanced or advanced, Hawes showed that 285 of this number were told by the family physician that they did not have consumption. Discussing Hawes' paper, Dr. Richard Cabot said he believed the same condition was true of every state in the Union. Small wonder then at the activities of the laymen in tuberculosis work.

At the opening address of the Sixth International Congress on Tuberculosis, Devine said: "Why should laymen, that is, teachers, business men, nurses, social workers, and others, who are neither sanitarians nor physicians, come to this international congress? Because doctors have been remiss. In other words, if doctors and health officers did their duty we should not be here."

In 1916 McCrae discussed the divorce of tuberculosis from general medicine. That some measure of separation had taken place he said was useless to deny, and both sides were losers. The lack of knowledge of this disease among some members of the profession is often a tragedy. He called this state of affairs a problem, and said the one explanation of this problem was "poor teaching." In "Early Pulmonary Tuberculosis," published by Wood & Co., Hawes says in the majority of our leading medical schools the subject of tuberculosis receives scant attention. Students are still taught that in order to make a definite diagnosis of pulmonary tuberculosis there must be bacilli in the sputum, or marked evidence of a consolidation in the lungs, as shown by dulness, bronchial breathing, increased vocal and tactile fremitus and râles. That a diagnosis can and should often be made without a positive sputum and without many of these signs in the chest is rarely brought to their attention.

Thayer is quoted as saying that in the great majority of our schools today the instruction of the student in tuberculosis is to say the least rather fragmentary.

Landis quotes from a report of a committee appointed to investigate the methods used in teaching tuberculosis in various medical schools, out of 40 schools so investigated only seven had a course in tuberculosis which could be considered at all adequate.

With this evidence before us we can fairly assume that the teaching of tuberculosis in medical schools is inadequate, and on account of this inadequate teaching the general practitioner is not properly equipped to make a diagnosis of early pulmonary tuberculosis. To discuss the value of early diagnosis before this Section is bringing coals to Newcastle. Bartlett's view of its importance, however, is worth quoting: "The fact remains that when a case of this disease is discovered early and the present methods of treatment are carried out intelligently, from 60 to 80% of the patients recover. It does not need any new specific, it does not need anything but the early discovery of the cases." "The next step in tuberculosis work," says Donald Armstrong, "is the first step, namely, the discovery of the disease." To this slogan I add the word "early." There is a stage well recognized by signs and symptoms even before the standardized classification, "incipient." This stage might properly be called the early activation of a tuberculous infection. One hundred per cent. of these cases go first to the general practitioner. In this stage home treatment as practised by Pratt would achieve glorious results. Any steps, therefore, which will equip the family physician to recognize pulmonary tuberculosis at this stage will inspire tuberculosis workers with renewed courage and hope in their efforts to conquer consumption.

With this end in view, we plead for the creation of a Department of Tuberculosis in Medical Schools. The general practitioner is our first line of defence in all invading illness. To strengthen this line to the greatest degree of efficiency is to insure the safety of the besieged city. Through this department the research results of 20 years of intensive tuberculosis work can be epitomized and taught. The policies of proven merit of these years of untiring effort can be demonstrated. With earnest instructors, worthy of affiliation with Grade A medical schools, the course could be made indispensable to students and furnish better training for the future general practitioner.

For these men who are now engaged in general practice the Department of Public Health proposes a series of consultation clinics in pulmonary tuberculosis. Plans have been perfected for the creation of 16 consultation clinics in various cities and towns in the state. These clinics will be conducted by physicians attached to the state sanatoria and the family physician will be able, without price, to obtain expert diagnosis in his tuberculosis cases. In addition to this we plan to demonstrate the case in detail to the family physician; history taking, method of making physical examination, interpretation of the signs elicited by auscultation and percussion, as well as interpretation of the symptoms revealed by the history of the case, will be thoroughly discussed. In this effort we expect hearty coöperation from the general practitioner. For, in the words of Voltaire, "Men who are occupied in the restoration of health to other men by joint exertion of skill and humanity are the great of the earth."

These are days of reconstruction. Medical schools and medical men may well give ear to the present unrest in tuberculosis work. The present condition of affairs is no longer a professional secret. Popular magazines teem with criticisms of them, and the remedies suggested, as might be expected, coming from those on the verge of despair, are drastic.

The adoption of these policies will provide a bigger army of better trained men. Such reinforcements will delight the pioneers who have borne the brunt of the battle with varying success, and who through these agencies see the dawn of victory in the conquest of consumption.

DISCUSSION.

Dr. Arthur K. Stone, Framingham Center: About a quarter of a century ago a callow youth just out of the medical school had a vision. It was a great vision. He saw relief for the people who were dying of consumption in the tenement houses in all parts of the city. At his suggestion a bill was introduced into the Massachusetts Legislature to provide for the construction of a sanatorium for the care of these people. Dr. Lawrence Flick, one of the leaders in the tuberculosis movement in Philadelphia, and in the whole country, wrote to this man that it was a great idea but that no government would ever undertake the tremendous job of caring for tuberculosis.

A great many of you gentlemen are too young to know anything about the terrible conditions existing before the sanatoria and hospitals for consumptives were built. All that floating tuberculous population, dying in the tenements under most distressing conditions, have disappeared. Dr. William J. Gallivan's vision has come true.

In Framingham, where they have a record of nearly ten active tuberculosis patients to each death, they find that they need for the care of the people that are under observation, at least one bed for every death, and I do not believe for one that the tuberculosis work began at the wrong end when it began with building institutions. It may be staggering in the amount of cost, but I think the good that has come, the saving of misery and helplessness, in addition to the saving of a great many lives, is due to the well hospitalized condition of Massachusetts. I believe that we need every bed that we have; that we have empty beds is a misfortune. We have the patients and the beds should be filled; that they are not is because the local authorities do not realize their opportunities. The expense is nothing compared with the benefits that have been received.

Dr. **Edward O. Otis**, Boston: I want to speak of what we are doing at Tufts College Medical School in teaching tuberculosis. There is a professorship of pulmonary disease, and students of the third and fourth years receive instruction in this branch. It consists chiefly of a system of didactic lectures giving a general program of the whole disease, covering, one might say, the fundamental points, and, most important of all, a series of clinics extending over the third and fourth years. We have three institutions which provide these clinics. First, the Mattapan Consumptives' Hospital; second, the Out-Patient Department of this same hospital, in which various instructors connected with this division give instruction in the diagnosis of early cases and suspected cases; third, the Tuberculosis Department of the Boston Dispensary. These classes are divided into sections of about seven or eight students and the clinics last about two hours. They are continued a certain period of time, altogether too short, but such are the demands on our students that our time is limited. The most important part in the teaching of tuberculosis are these clinical sections, in which the students at first hand meet the cases and are taught how to examine patients, how to obtain the history, and something about the social side of the patient. They are also given instruction in x-ray determination, and they are also, as time permits, given sputum to examine. So that we feel that these students when they graduate have some fundamental knowledge of tuberculosis; have some idea of how to make an early diagnosis. At the end of the third year they have an examination upon that subject alone, and at the end of the fourth year a part of the examination—one of the three papers on clinical medicine—is upon tuberculosis. This has been going on for the last fifteen or more years and we feel that the students, when they graduate, have some fundamental and clear knowledge of how to go to work to make a diagnosis of tuberculosis.

One other point I would like to add in reference to what Dr. Gallivan has said in regard to general clinics for practitioners, that is a school at the sanatorium. I have spoken of this before. I have often felt that our State sanatoria can do a great deal more than they do in giving instruction in tuberculosis. I do not see why a school, lasting from ten days to two weeks, could not be held, giving intensive work, and the physicians in the community invited there, giving free lodging, free board, and possibly some man from Boston, or elsewhere, who is an expert, to join with the staff at the sanatorium. In that way an intensive course could be given to physicians which would be exceedingly valuable. This could be repeated time and again. It seems to me some such plan as this would be of great value.

One other point with regard to our own teaching at Tufts Medical School. We did use for a year or more, until the war came, the sanatorium which is nearest to Boston—North Reading. We sent some of our students out there with great advantage to them. They had clinics and saw the cases under sanatorium conditions. Such an arrangement was very popular with the students and was heartily entered into by the staff of the santorium.

Dr **Ernest B. Emerson**, Rutland: I think Dr. Otis' suggestion that intensive courses be given at the sanatoria and furnishing room and board for whoever is interested enough to come, would be a very good thing if the Doctor would suggest some way to house these people.

This spring we have held at Rutland a series of lectures once a week to which the physicians of the surrounding country have been coming. We have taken the subject up in a general way—told them about the classification, the methods of diagnosis and treatment. Anybody can diagnose an advanced case, but it is frequently extremely difficult to diagnose an early case. These physicians have been driving in to Rutland from miles around and I have been very much surprised at the interest shown. Rutland, as you all know, is located in the central part of the State, rather a remote community and difficult to get at, yet these men have been coming in from a distance of 15 to 20 miles. That indicates interest in the question of tuberculosis. I think if they can have information on tuberculosis put in front of them in such a way that they can get at it they will go for it.

What Dr. Gallivan has brought out in his paper about starting a consultation service is a most execellent idea. I think it can be done in such a way that it will not conflict with the general practitioner and I believe that it will bring about a spirit of coöperation between the general practitioner and the sanatorium men. The general practitioner is meeting many of these cases as we meet them in the sanatorium, where a diagnosis is extremely difficult to make. I feel that the patient ought to be given the benefit of the doubt. I believe that if the doctors are unwilling to commit themselves by making a flat diagnosis, and in some instances they are justified, they will take advantage of such a service. Get the patients started; give them the benefit of the doubt. If they have a case of typhoid fever they treat that; if it is a suspected case they treat it as a suspected case of typhoid. They give the patient the benefit of the doubt. I think that ought to be done in tuberculosis. It is not necessarily a sentence of death to the patient. It may give the patient a little jolt but if he does not get that little jolt sometime he is not going to get well. We see too much of this end-result business in the sanatoria: cases which, if we can believe their histories, it seems to me have been handled in a way which is almost criminal. I do not think that represents the majority of men, but we do get those cases occasionally.

I think that giving a course in the medical schools is one way to bring about a better understanding of the disease. Anything that can be done to bring about earlier diagnosis is worth while and will be well supported.

Itinerant Consultation Service.

By H. S. Wagner, M.D., Pocasset, Mass.,

Superintendent, Barnstable County Infirmary.

Consultation service for the detection of tuberculosis had its inception in the Framingham Health Demonstration. After a certain time, there, results were analyzed and it was found that the time of one of their chiefs was being requested regularly each month by physicians of that community to assist them in their diagnosis of tuberculosis. It was evident that some activity had developed which was beneficial. Therefore, it deserved a name and was dignified by the name of consultant service. Barnstable County was in the meanwhile opening a small tuberculosis sanatorium and presented the opportunity of utilizing their resident physician in attempting such a service. The committee of the Massachusetts Tuberculosis League, having the work in control, advised that it be supported by clinics, the wisdom of which course is now shown to be fully justified. The advantage of this plan was that it gave a working base, quite consistent with the purpose and of use to the consultant in the disposal of the cases. During the first year, anything in the nature of so-called propaganda carried directly to the people has not been attempted. The scheme was to work through the physicians, visiting nurses, and the local health boards.

The work was made further possible in the support given it by the large state organizations, State Department of Public Health, Trustees of Hospitals for Consumptives, and the Framingham Health Demonstration. Their representatives introduced the consultant generally at medical and board of health meetings or personally to the different physicians on the Cape. Some such proceeding by a representative person, having the entire confidence and respect of the community is absolutely essential to the success of this project.

In the handling of consultation cases, our experience has shown two possible contingencies liable to arise, both of which should be referred to the physician requesting consultation. Before the examination, the question of permitting an informal discussion in the presence of the patient should be decided. In this event, the patient is liable to join and subject both to a bombardment of questions—the direct answers to which are embarrassing. On the other hand, it might better be decided to reduce discussion to the minimum during the consultation and have the general practitioner act as spokesman in presenting the case finally. At the end of consultation, if the diagnosis is positive, it is the duty of the physician to report his case.

The consultations were held when and where it was deemed to be most convenient to the patients in case of an urgent call; otherwise, it was generally understood that the time would be limited to those days on which clinics were scheduled in that vicinity. Two-thirds of the physicians on the Cape have used this form of the service. One-half of them have used it two to four times. At present writing, there is expected a total of five to six consultations monthly.

In estimating this work, certain advantages and disadvantages are to be considered as to geography and concentration of population. At least a day is required to make Provincetown, which is sixty-five miles distant from the local sanatorium. When the trains are on schedule, a two-hour period of working time is effected; otherwise, a night lay-over is required to complete the work the following day. It is also necessary to spend a day in each of two other towns on the eastern end of the county. The remaining towns can be visited by automobile because of the good roads—a distinct advantage in saving time.

Obviously, it would be much easier to conduct the work, if this 30,000 lived compactly in the space required by the ordinary small city with that population—where but one visiting nurse association and one board of health would have to be approached—also where opportunity would be offered to meet the physicians oftener in their medical meetings. Under present conditions, one has to examine fifteen sets of records for deaths from tuberculosis, and to interview fifteen boards of health.

The clinics are conducted bi-monthly in Provincetown and monthly in Hyannis, Falmouth, Bourne, and Sandwich. They cover the usual class intended for in the cities, also another class that call a physician so seldom in their extremities that they are forgotten; also any group of patients who, their physicians believe, can be dealt with more quickly collectively than individually: for instance, parts of families and school children.

Much reliance is placed on the local visiting nurse in the operation of the clinics. Some few cases are found by her alone. They are such as she can prove to her own satisfaction to have been without medical attendance. Inasmuch as she comes in intimate contact with these families in her problem of school nursing and child welfare work, she has an advantageous position from which to observe a possible prospect for the clinics.

The final figures of the year's work cover 148 examinations, 77 of which were made in the clinics and 71 in consultations. Naturally in the consultations were found a greater percentage of tuberculosis, because all cases were selected by physicians. On the other hand, there were many more children examined in the clinics. The exact figures are as follows: Total adults, 93, of whom 36 were diagnosed positive, and 55 children, of whom 6 showed tuberculosis of bones or glands, and 2 a pulmonary form of disease. The latter eight are not included among 17 children reacting positively to the skin test with Koch's old tuberculin.

Out of 148 examinations, there were found 44 positives. It is not to be understood, however, that this means 44 first-hand diagnoses. As a matter of fact, in 17 of these cases, there were no doubts of the diagnosis in the minds of the physicians requesting the consultations. For instance, one physician might wish to impress his patient more strongly, and accordingly have his advice as to diagnosis and treatment seconded. In another group of cases, the physicians were quite suspicious of tuberculous disease, but hesitated to announce a decision to the family, so they left it for the consultant to do. In one case, a diagnosis was held in abeyance, it seemed, because the physician disliked to decide any issue on general principles. In these cases there was not much that could be added in the way of diagnosis, except to classify them on the basis on which patients are entered and discharged from a sanatorium. As a discussion passes from one of diagnosis to prognosis and treatment, the function of the consultant seems to become more useful, because it is in this field that he has had the experience to enable him to foretell the chances of future convalescence and relapse. These diagnostic aids are not so much a matter of skill as of time and persistence in getting together all data concerning a case. This is exactly what the busy practitioner has not time to do, for which reason, also, the recording of statistics in general and laboratory assistance are angles to be developed in a consultant service.

This classification procedure is becoming more interesting to them, whereas, heretofore, it was regarded as inconsequential. It involves considerable time to classify a patient, giving due regard to the past history of disease, present symptoms and signs. The time element of a tuberculosis history and its unknown infection leave so much to speculation that a busy practitioner, having settled the diagnosis, will thus overlook classification and skip to treatment. Still it has been largely through the study of classification that we have attained much that we now know concerning the course of tuberculosis.

Of these 17 cases, five were arrested and eight were active and showed tubercle bacilli in sputum. One has been regarded as active for several years but tubercle bacilli have never been demonstrated. A guinea pig has been injected with sputum three times without result. We are now waiting the availability of an x-ray plate.

This leaves 27 cases that were diagnosed first hand by the consultant. Seventeen were active, of which four were positive for tubercle bacilli, while among the 10 inactives none was positive for tubercle bacilli. Eighteen of this group of 27 were classified as incipients. One of these had tubercle bacilli in sputum for one month, which was fortunate, because he exhibited no well defined râle in either lung. In eight cases, the diagnosis was made without finding the typical râle succeeding cough, detailed as follows: In two of these, râles were atypical of tuberculosis both as to sound and location. Both were post-influenzal by several months. Their sensitiveness to twentieth milligram doses of Koch's O. T. threw the diagnosis in favor of tuberculosis in the absence of an x-ray plate. One case had enlarged cervical glands, low grade fever, positive family history, and a chest that we like to regard as fibroid. Certain signs drew our attention to the kidneys and necessitated an examination of the urine, demonstrating tubercle bacilli therein. Another of this group was interesting. He was a man of 61, whose history, both personal and family, was not considered positive enough to suggest at first even a tentative diagnosis of tuberculosis and whose chest findings corroborated this idea. However, greatly to my surprise, a small morning specimen of sputum sent to the laboratory routinely revealed tubercle bacilli. Even then, a chest examination could not only lead one to presume on the affected side. The x-ray plainly showed it to be both sides. Strangely enough, this case was not sent in by a physician, but came for a little rest, as he expressed it. In three weeks, under rest treatment, the morning sputum had entirely dried up. When the patient was acquainted with the significance of such positive sputum, he then recollected the past periods of raising. One speculates then on some kind of a drag-net in which such cases can be caught. The answer seems to be persistent investigation applied uniformly to history, laboratory, and physical diagnosis from all angles.

Another illustration is that of a Portuguese woman, 38 years of age, at present in her ninth pregnancy, and who is developing definite râles following cough; also, a comparatively young man, breaking down in work of an exhausting nature, necessitating driving his own automobile for 150-200 miles daily during the fall prior to the recent severe winter.

It can be seen that there are indications of a remarkable resistance to a tuberculosis among this type of case brought to light by extra effort. In their histories are points confused with asthmas, kidney disease, congestion of lungs, pneumonias, etc. This is very different from the frank cases where the histories are clean-cut with exact milestones pointing to tuberculosis and generally nothing else, which cases present themselves so openly as invalids that they are generally provided for in cities at the rate of a bed for every death.

There are two classes that the consultant service seeks especially: those perpetually moving up to take the place of the latter, and those older individuals with an unusual resistance to the disease. Just how much sooner the consultation service can anticipate pulmonary tuberculosis in the first class with a diagnosis and thereby lessen the period of infectivity is a question, because their onset of symptoms ordinarily sending them to a physician and the demonstration of tubercle bacilli are not far apart. The close scrutiny of much data alone will tell. At present, we think we can show ten cases coming under this head. Still it is unsafe to predict how much good, therapeutically, can be done for them until a year has elapsed at least, because of the inexorable course that pulmonary tuberculosis is known to pursue in younger people.

Therefore it seems that the greatest good will be derived from persistently trailing the elderly inactive and advanced type of case heretofore illustrated. Our experience with these show that they have undoubted periods of infectivity and some of them seem to be entirely unaware of it. It might be added here that some of this class are capable of dying from other causes than tuberculosis. Six of our positive diagnoses show evidence of this high resistance. The remainder exhibited the usual type.

NEGATIVE CASES—ADULTS.

There were 57 adults in whom a diagnosis of tuberculosis could not be returned. Two were less than eighteen years old. They cover many types of conditions like lung abscess, atrophic rhinitis, asthma, frontal sinus infection, endocarditis, arthritis, broncho-pneumonia, and indefinite heart conditions. It seems that several of these cases had requested their physician for consultation or examination at the clinics—the latter being quite aware that no tuberculous disease was present.

In others, there were certain signs and symptoms pointing to tuberculosis, but inconsistent with its course. Some of them were ruled out by milligram doses of Koch's old tuberculin. In nine of these where no reaction was obtained, there was quite a comforting assurance that they were negative. With the consent of the physician requesting the consultation, it would have been used in most of the negative cases, providing circumstances had permitted it. A negative result is invaluable in case records.

ASTHMAS.

The asthmas in this group are interesting and definite enough to mention further. They have been more consistent than any other condition in producing signs and symptoms liable to be mistaken for pulmonary tuberculosis. The term is used generally and no attempt will be made to classify them. None of the cases was subjected to the tests for protein hypersensitiveness.

There were twelve, aged from twelve to fifty-one years. They showed squeaks and groans generally throughout the lung or only on one side towards the base with histories of dyspnoea occurring spontaneously or possibly due to weather changes. Some raised sputum, mucous or muco-purulent, in varying quantities. An opportunity was offered to test six for eosinophilia and a sensitiveness to tuberculin. These were all negative to the latter and the blood of five showed that eosinophiles had increased to four, or nine per cent. Three were females, nine were males.

Concerning the living tuberculous in the county, our surveys show 77 on our lists May 1, 1919, which has been increased to 120 on May 1, 1920. The ratio of dead to living has been increased from one to three and a half to one to five. This is an unfavorable comparison with the ratio of 1:20 attained in the Framingham Health Demonstration work, but when one compares the death rate of these two districts, it is found that the rate on the Cape is so much less, that one wonders what their normal ratio between dead and living cases should be, and just to what extent the death rate might reflect the size of the multiplier used to estimate this number of living active and latent cases.

Congested living conditions, age, incidence, dusty occupations, sex, nationality, and alcohol, all contribute as determining causes affecting the size of this multiplier, in that they afford opportunity for the most susceptible to the disease to exist in centers best suited to their decline and to the infection of others. When all these factors become 100% effective, there is no doubt that the Framingham multiplier will be large.

Applying them to conditions in Barnstable County, one finds that it suffered a loss in population from 1900-1910; that there are no congested living conditions of moment except in Provincetown; that there are no dusty occupations; that the prevailing nationality is Anglo-Saxon and a Latin-Negro type—the Portuguese.

The town of Provincetown offered the greatest number of examinations,—41, and among these were found likewise the greatest amount of tuberculosis,—13, all of whom were Portuguese but one. This accords with the higher death rate Provincetown has always had compared with the remainder of the Cape, and justifies the recommendation made in the last survey by Miss Billings that a tuberculosis clinic be established there.

The average age of people dying from tuberculosis is 34 years, according to Lillian Brandt. In Provincetown, it is 31 years; but in Barnstable County, minus Provincetown, it is 42 years. The average of the living tuberculous Portuguese is twenty-seven—which is low compared with thirty-eight years—the age of the Anglo-Saxon stock—up-the-Cape.

The old idea that dark-skinned races are more susceptible than the fairer skinned is again borne out, but it could also point to the congested living conditions of Provincetown unlike any other town on the Cape. Moreover, the age-incidence among the Portuguese tuberculous is consistent and would suggest strongly that it was drawn from a population that was normal rather than from one suffering a withdrawal of those age-decades when tuberculosis is most prevalent. In support of this are the statistics concerning the loss of Cape population from 1900-1910, the presumptive cause of which fact is that the younger adults, excepting those in Provincetown, seek employment in the commercial centers of the State.

So far our statistics seem to have pointed in a direction that conveniently gives us ground for an alibi explaining why we have not approached more closely the figures of the Framingham Demonstration. More data and statistics might change our conclusions—especially the figures of the 1920 census.

One benefit stands out plainly,—that the service was instrumental in bringing twenty-two patients to the local sanatorium, one-half of whom paid their own expenses. Some of these would have come anyway, but at any rate, due to the service, they came earlier. Without this additional number, our average census would have run noticeably lower.

Our work with the local boards of health relative to children is encouraging but slow because there are so many—15 in the county. It is on the basis that while there is much infection from tuberculosis in childhood, there is much less morbidity; that there is considerable that we do not know about the threshold of tuberculous disease—especially in childhood; that the statements of reliable investigators connect many tubercular adults with scrofulous disease in childhood.

We try to detail for them the facts concerning any children coming to the clinic whom we believe ought to be admitted to the sanatorium. As a rule, these recommendations are acted upon and the officials are brought to consider the advisability of sending, for short observation, certain infected children, who show indications that tuberculous disease is tending to develop. This is another step toward the practical realization that "an ounce of prevention is worth a pound of cure."

For the work during the ensuing year 1920-1921, there is naturally to be expected an increase in the number of examinations, providing our work during 1919 has been considered of any value. We ought to receive more coöperation from the physicians and boards of health, and from two more clinics operating soon in the towns of Orleans and Chatham. An x-ray equipment will be at our disposal; also the benefit of a local organization on public health lines will be felt in its assistance to secure a certain amount of publicity, and to establish in the minds of the people that this is a necessary development of preventive medicine in stamping out tuberculosis.

The cost of the experiment has approximated $1,000.—$5.50 per examination, or $29 for each case of tuberculosis examined. As for this $29, we are entirely at sea in judging it as a cost, because we have no standard. Its redeeming feature is that it seems cheap as compared to putting the average tuberculosis case through a sanatorium with untoward results. But time will develop a standard cost as the Framingham idea is put into operation under other conditions and their results present themselves for comparison. However, until consultation service is lifted out of the realm of experimentation, any cost is bound to be justifiable if within reasonable limits and if no criticism can be found in the detailed items. Furthermore, a certain amount of time must elapse to permit judgment regarding the actual benefit derived from our early diagnoses, from the standpoint of infectivity and arrest. To maintain any high degree of effectiveness in these directions means that we must still reckon with the changing of habits and human nature. Simply telling an individual that he has tuberculosis does not always avail much, hence together with it should continue to go education and appeal.

DISCUSSION.

Dr. P. Challis Bartlett, Framingham: The Consultation Service in Barnstable County has, I believe, demonstrated that this kind of service is applicable to a country community, and will materially increase the number of known cases of tuberculous disease in such communities. The Consultation Service on the Cape has helped to keep the County Sanatorium at Barnstable nearly full at a time when many of the sanatoria were caring for less and less patients. As the work progresses in this county it will undoubtedly give us a more correct idea of the number of tuberculous cases in country communities than we have ever possessed before.

In the work of the Community Health and Tuberculosis Demonstration, the Consultation Service has always been a help in the detection of tuberculous cases. The Committee on Appraisal of the Framingham work state: "The most important of all the practical contributions made by the Demonstration is the working out of a plan for medical consultation service, which is clearly the most promising means yet devised for securing a reasonably complete knowledge of the amount of tuberculosis existing in a given community. The Consultation Service has attracted wide attention throughout the country."

When the Framingham Demonstration started there were 27 known cases of arrested and active tuberculosis on record in Framingham. While there were under observation 40 cases during the year preceding the Demonstration, the number under observation during the first year the Demonstration started was increased to 185 active and arrested cases, approximately one-third of these being discovered through the Consultation Service.

During the first year of the Demonstration of a total number of cases reported, 44 per cent. were advanced, while during the second year only 16 per cent. were advanced. During the decade preceding the Demonstration there was reported an average of 13 cases of tuberculosis a year. During the first year of the Demonstration this number was increased to 59 and since that time there have been over 30 cases reported each year. This service as applied to different types of communities will naturally be modified to the type of community and the special problems in each individual case. In the communities where it has been tried, the interest and stimulation for the early discovery of tuberculosis has noticeably increased.

Dr. Eugene R. Kelley, Boston: I would like to add one more word. It is my belief that nothing has been done for at least a decade of as much value in tuberculosis work as this Demonstration that has been made in the Cape region. I think it is something that the State Tuberculosis Society can always look back to with pride. I almost feel it is going to mark an epoch in the practical method of getting at and discovering tuberculosis. I hope all members of this section, if they do not have it clearly in mind, will get out their map and look carefully at the Cape and see what it means in distance and area, and then realize that the population is not much over 30,000 for the whole territory; and then begin to think over what that would be in terms of a more compact community. Then only will they begin to realize what a result has been accomplished. That is what I had in mind in my first discussion. Possibly my friend, Dr. Stone, misinterpreted what I said. I agree with him. I do not feel that the money expended in institutions has been wasted. I do not feel that it was a mistake to start with the institutions, but I do feel, and feel most deeply, that we have got a certain number of beds that are so often kept for a year, a year and a half and sometimes five years, by the old "stagers" that cannot be made much if any better, while these beds might be used for a period of six months at a time for early stage patients who could be turned back as self-supporting. That is why I feel that these two things,—a deliberate, progressive survey, along the lines Miss Billings brought out, combined with itinerary consultation service, that has been carried on for the last few years, are more productive of good than anything I have known for a long time in tuberculosis work.

Occupational Therapy for the Tuberculous.

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In some minds there seems to be more or less confusion as to the meaning of the term occupational therapy, its object, and how it applies to the tuberculous hospital patient.

Today various allied terms are being used, such as occupational and vocational therapy, ward occupations, occupation diversions, and reconstruction work.

Formerly, and especially since the early nineteen hundreds, under the less euphonious names of graded, graduated, or controlled exercise or labor, this supplementary method of treatment constituted a part of the routine in many of our hospitals and sanatoria.

It may be well to give a brief summary of the history and rationale of exercise as relating to the consumptive.

Some two hundred and fifty years ago Sydenham advocated horseback riding and its associated fresh air as a cure for phthisis. His prescription was entirely empirical and based only upon his observation of the good effects obtained.

Again, as early as 1840, Bodington of England, in his "Essay on the Treatment of Pulmonary Consumption," recommended the use of fresh air, good food, and exercise.

It remained for Brehmer, the father of sanatorium treatment, to push exercise to the forefront, using as fundamental in his treatment, long hours of walking, strenuous mountain climbing, and deep breathing exercises. Later, his famous pupil, Dettweiler, noting the disastrous effects of these excesses in many of his preceptor's cases, became the apostle and champion of absolute rest, opening in 1876 his sanatorium, introducing for the first time the present day reclining rest chair and omitting from his schedule of treatment all but the very lightest grades of exercise.

The great majority of physicians, following Dettweiler's lead, instituted the rest cure as the dominant feature of sanatorium treatment and this idea prevailed up to the early years of this century.

In the meantime Koch, in 1890, had announced his tuberculin experiments and proposed its use as the long sought for cure. The whole medical world took this up immediately and the injudicious use of tuberculin by men of good, as well as those of ordinary, reputations soon brought about a strong prejudice against its employment, many abandoning it as a therapeutic measure, others holding fast to their opinions that, in tuberculin they had, not a specific, but a definite aid towards the arrest of the tuberculous process, believing that it caused the production of antibodies in the tissues, some of an antitoxic nature, others that stimulated the formation of walling off fibrous tissue.

In 1903 Wright, in his paper on vaccine therapy and the opsonic index, showed the absolute necessity of proper dosage in vaccines, and the use of tuberculin again became popular. Thus we see that tuberculin therapy was the first attempt at rational tuberculosis therapeusis based on scientific grounds; in this case, the production in the tissues of demonstrable antibodies specific to the *toxin* of the bacillus but not, as we would wish, to the bacillus itself. It is common knowledge that an overdose of tuberculin produces the same symptoms in the patient that are present in clinical tuberculosis, such as malaise, weakness, loss of appetite, elevation of temperature, acceleration of pulse and increased expectoration. Properly graduated doses, on the other hand, many stimulate the production of antitoxic bodies to such a degree that large doses may finally be borne and no clinical evidences present themselves.

As we go into the problems of immunity we find that active immunization is dependent upon the action, not of dead, but of living, bacteria upon the tissues of the body and, in response to the stimulating influence of these bacteria or their products, the production of antibodies of various kinds which in time offset or neutralize the invading organisms' destructive agents. The theory of autoinoculation as elaborated by Wright is based entirely upon this production of protective antisubstances.

It is thought that the symptoms in clinical tuberculosis are caused by excessive autoinoculation at the seat of the lesion, and that an excess of toxin is thrown into the circulation, as in an overdosage of tuberculin, causing the rise in temperature, etc., and that the subsequent return to normal is due to the presence of the above mentioned antibodies, produced in response to bacterial stimulation; and it is also thought that in many cases that this autoinoculation may be controlled by a careful regulation of rest and exercise.

However, it was not until 1908 that Paterson, of Brompton Hospital, England, working with Inman, developed a system of graduated labor, and established a definite scientific relation between autoinoculation following exercise and the subsequent condition of the patient. In 1911 Paterson published his book, "Autoinoculation in Pulmonary Tuberculosis," in which, among other things, he gave very elaborate tables and explicit directions as to the employment of systematic graded work. He gave very definite warning of the dangers of excessive autoinoculation leading to overpowering autointoxication, but, as with tuberculin, the value of his method has been questioned and denied by many.

In the last decade many modern sanatoria have incorporated controlled exercise in some form as part of their treatment, not for its psychological effect alone, but as I have gone to some length to show, for its true rational therapeutic effect. To quote from King in his excellent monograph. "If exercise or labor is introduced into the treatment of tuberculosis merely as a diversion for the patient, as a hardening process, as a means of stimulating the appetite or forming a healthy state of mind and digestion, or worse still, as an economic factor, without the vitally important comprehension of its dominant function, that is, by the production by autoinoculations of specific poisons, then the system is almost surely doomed to failure. But, when the fundamental principle of its action is kept conspicuously in view, its therapeutic value has been repeatedly demonstrated, and without doubt it forms one of the most potent factors in the therapeutics of tuberculosis." With the establishment of the more recent army tuberculosis hospitals, occupational therapy received a tremendous stimulus. Report after report was published concerning the favorable results obtained. At New Haven as many as thirty-five reconstruction aids were employed at this work, instructing the eligible ones among 450 patients. It is not the graded labor therapy of Paterson's but is similar to, though on a much larger scale than, occupational work at Trudeau, begun thirteen or fourteen years ago and inaugurated, as Lawrason Brown states, because the patients were suffering from ennui, and wished something to do. There, similar, though not so completely equipped, . work shops for handcrafts as used in the army were the means employed.

At the Atlantic City meeting of the National Tuberculosis Association last June, Colonel Billings, in his discussion of occupational therapy in the Army, spoke of the need of mental and occupational therapy, and finally that the almost universal testimony of hospital personnel and patients places occupational therapy in the treatment of tuberculosis as of the greatest psychological and material value.

Colonel Nichols quoted Colonel Bushnell as insisting that a fourth great factor, psychical, be added to rest, food, and fresh air in the treatment of tuberculosis.

Captain North of the Oteen Hospital in a very excellent paper stated that it was his unqualified conviction that the paramount value of reconstruction work was the psychic value. Again, that 80% of all efforts are indirectly curative or psychic, and in conclusion, that it could not be too emphatically stated that the primary means of treatment for tuberculosis was medical and that the principal direction reconstruction work should take was the psychic one.

There is nothing of graded exercise in these reports, though we know that exercise in these hospitals was controlled and more or less graduated.

The term occupational therapy must have a definite meaning if we are going to use it, and from the foregoing it is evident that its fundamental object is to favorably influence the patient's mind through occupation. In some forms of mental disease this treatment is, of itself, curative. Not so with tuberculosis. Something more than mental status has to be considered. With its many stages, all varying as to prognosis, some utterly hopeless, individual problems as to rest and exercise arise that are very much more complex and very much more important than the kind of entertainment to be prescribed.

The application of occupational therapy in the incipient is a much more simple problem than in the advanced case. Its application in the man with a prospect of five years of life is decidedly less difficult than in the one who will live only three months or less, and don't forget that you may make the latter very happy in his last days nor, on the other hand, that no amount of endeavor in this line will help your man with a wife and six children at home who need his usual weekly wages.

In the early case the hope of a complete arrest, the return to his former occupation, and his so-called man's job are of themselves good mental medicine, but in the far advanced, no such hope may be entertained. Here, occupation for psychic purposes comes into its own. It is with these cases that we are concerned at the Boston Consumptives' Hospital. Such patients will tell you that formerly they simply sat around wondering if meal time would ever come, but now since they are engaged in basket making or the like, they never think of time. Isn't this worth while?

I believe that we know enough of occupational therapy with its effects on the mental or, if you wish, the psychic status of the patient, to incorporate it definitely as a therapeutic aid, by means of which the patient is made more content during his long and otherwise tedious stay at the hospital. It seems to me it prepares the way for treatment, the vehicle, rather than the remedy itself, the syrup in our prescription.

We should always remember that our desired goal is to raise the patient's immunity to its highest possible point and to keep this immunity comparatively high. This means long, weary months of hospital treatment and coincident *morale* building, through occupation, will time and again substitute success for failure.

In our work among the far advanced cases at our hospital, we have for a number of years followed methods approaching nearer to occupational than the graded autoinoculation therapy.

Our activities may be roughly divided into three channels, religious, diversional and occupational. Religious facilities are provided for all denominations. Chaplains are appointed who may be reached at any time, day or night, and I am unable to find a proper means of expressing in measure the value of their services.

Under diversions come many forms of indoor entertainment, some educational, some of no relation to education. Of all our aids in this line, I think that the daily morning and afternoon newspapers, weekly and monthly magazines should occupy first place. These are sold to the patients by one of their number, the latter making his legitimate profit and being the official newspaper man in the controlled exercise class. The hospital furnishes a small circulating library of fiction on each ward, the books being reviewed from time to time, and the fact that they are read is the best evidence of the demand for them. Moving picture shows come next in popularity. The hospital owns a very excellent moving picture machine and efforts are made to procure reels at least once a week, a crowded house being assured. At times songs, dances, and vaudeville acts are contributed by well-wishing friends from the city. Often, especially during the winter months, card parties, progressive and otherwise, are held in the same place, always under the supervision of nurses. A great many of the men and some of the women enjoy playing checkers, chess or cards on the wards. So long as this causes no undue excitement it is allowed. Again, some prefer to play solitaire or the old-fashioned patience, seemingly obtaining as much solace and comfort over a successful solution as the discovery of a rare old edition brings to the book lover. This kind of idle diversion is unhesitatingly condemned by most authors. I cannot feel so strongly on this subject. Just here tobacco smoking should be mentioned. Whatever your individual or collective opinion as to bad effects of tobacco may be or the tolerance of its use in hospitals, the average tobacco habitué, with or without your permission, is going to smoke. All of us can recall pictures of old men with their pipes in their mouths that have been drawn for us as illustrating the acme of contentment. Card playing and smoking may appear irrelevant in a paper on occupational therapy but they have such a direct bearing on your patient's psychology that they should be considered. At Mattapan smoking is allowed with an endeavor made to prevent over indulgence. Fortunately the very sick bed patients will seldom trouble you in this connection. And while we bear in mind this therapeutic quest and anxiety for our patients' mental contentment, should we forget those examples of perfect psychic equilibrium, the men who worry only about one thing either in this world or the world to come, that thing being the possibility of having to do either mental or physical work.

For several years at our hospital controlled rather than graduated work has been applied in from thirty-five to forty-five selected cases. This work is not hard; in the main, choremen's work,—mopping, sweeping and cleaning for the males: kitchen helpers and ward work for the females. Ten to twelve of the men are instructed and put to work as mail orderlies, this being in the nature of vocational therapy. Some are employed whole and some half time, according to their physical ability, and are paid a nominal salary, the orderlies more than the choremen. The work is not compulsory but is advised as a medical procedure. These patients are under medical supervision of course and should untoward symptoms present themselves, are immediately taken off the work. I am incorporating here a copy of the staff medical report made to our trustees very recently as to the physical condition of our patient orderlies

There are eleven such:

No. 1. Age, 44: night orderly, full time: far advanced, positive sputum case; cavity in right upper: left upper very moist. Has been working four months, gained four pounds. Feels much better.

No. 2. Age, 41; night orderly, full time; far advanced, positive sputum; extensive involvement in both chests; cavity right upper Has been working for two years. Gained twenty pounds. Says he is all right

No. 3. Age, 22; day orderly, full time; positive sputum case; entire right chest involved with cavity in upper lobe; left upper also involved. Is about holding his own, but claims he is much better working.

No. 4. Age, 33; night orderly, full time; far advanced, positive sputum case; massive tuberculosis entire left lung with cavities; right lung in good condition. Has been working for two years. Weight unchanged; feels in good health.

No. 5. Age, 30; full time; day orderly; moderately advanced, positive sputum. Has been working for six weeks; was a rank neurasthenic before working. Is wonderfully improved along those lines. His lung condition is much better.

No. 6. Age, 36; full time, day orderly; far advanced, positive sputum; most of the left lung with right upper involved. Has been working eight months and has gained eighteen pounds.

No. 7. Age, 42; one-half time, day orderly; far advanced, positive sputum case; most of left lung with right upper involved. Just about holding his own in weight, and feels much better working.

No. 8. Age, 44; one-half time, day orderly; far advanced, positive sputum; extensive involvement in both lungs. Has been working for one year. About holding his own, but firmly believes that he would go to bed if taken off work.

No. 9. Age, 31; about the same as No. 8.

No. 10. Age, 46; full time, day orderly; far advanced positive sputum case. Whole of left lung and right upper involved. Has been working only three weeks, after having gained eighteen pounds during his previous three months' residence.

No. 11. Age, 21; full time, ward and ambulance orderly; negative sputum, observation case. No evidence of tuberculosis. He is to be discharged June 1.

Those in the other classes of work show like improvement in their physical condition. There still remained in the institution a large percentage of ambulatory and semi-bed patients untouched by these means. Last September, through the good offices and financial aid of the Boston Tuberculosis Association, occupational therapy based along army lines was instituted by the employment of an army trained occupational teacher who should devote her whole time to this work. In a very short time she found that her limit of activity had been reached. Supervising the work of about forty patients who were engaged in actual production, buying raw materials, finding a profitable market for the finished product, and keeping books on each particular piece of work, was, I imagine, a bit of strain.

At this time the patients, all of the ambulatory type, were engaged in the following work: Reed and raffia basketry, weaving on press board-looms, knitting sweaters, socks and bags; elementary bookbinding, making photo books and blotting pads; bead work, chains, bags, and fobs, silver link chains, wooden toys, chair caning and crochet work.

Some of the men exhibiting exceptional skill in craftsmanship, one of them was chosen to act as a helper in instruction of the slower ones, runnings errands, etc., being given a small salary for so doing. A little later a former Technology student was installed as bookkeeper and record clerk. In this way Miss Emmons, the teacher, had more time for personal and special instruction. During the past winter, in addition to the above work, Turkish rug making and classes in French, English and music have been undertaken in small groups. Light gardening is being attempted by some at this time.

The winter's work having proved so satisfactory from every one's point of view, early in the spring Miss Emmons was given a trained, half-time assistant, also with army experience. She, working among the sicker bed patients, is giving a few of this group the pleasure of creative work. With these the work of course has to be very light and of a kind that may be put down or taken up at will.

In conclusion, then, first, occupational therapy's chief aim is psychic and that, based upon its psychic effect, it is applicable to all stages of tuberculosis, early and late, favorable and unfavorable; each case presenting its own problem; second, that when in occupational therapy controlled exercise is added, an additional purpose has been brought in, physical upbuilding with enhanced immunity; and finally the question, in what percentage of cases does it accomplish the desired object, which in the final analysis is to induce the patient to remain long enough under treatment to receive the maximum benefit thereof?

While most of us firmly believe that our results are most positively beneficial, only massive comparative statistics not yet available can answer.

DISCUSSION.

Dr. Bayard T. Crane, Rutland: The Rutland Private Sanatorium Association has given its attention for some eight or ten years along the line of meeting the problems of the patient on the patient's ground. It has taken into consideration the fact that the patient often found the life of the sanatorium far from one of happiness and contentment. How far that difficulty in the life of the patient goes in preventing recoveries and saving life I think has had scant attention in the past. In other words, the formula of "fresh air, food and rest," as a slogan in the treatment of tuberculosis (used, perhaps, to inspire the public with the idea of the simplicity of the cure) has had its dire effects. I think that the slogan to a certain extent has epitomized the idea of the profession as to what the proper treatment was and has perhaps kept us more or less blind to the patient's individual problem.

After years of association with the patients of all stages in the public institutions, and with the private patients, it has only little by little dawned upon me that the element of psychasthenia among patients is a very potent and a very prevalent one. I use this word psychasthenia as practically synonymous with our old word neurasthenia. With that as a factor to be overcome in the successful treatment of tuberculosis, one, in the practical management of an institution, has to cast about as to how to compete with this very difficult and very prevalent condition. Our first step was along the line of crafts, simply taught by a craft teacher; but we found that crafts, taught by careful teachers, did not arrive at the goal which we hoped for. In other words, the point of view of the patient was often missed by a person who is interested merely in teaching crafts. Little by little we have tested out the question of occupational diversion for patients, and have arrived ultimately at the conclusion that occupational therapy is useful in from one-third to one-half the cases and cannot be grouped according to the type of case nor to the extent of its severity, but more on their personality. In other words, our conception of occupational therapy as applied to tuberculosis, may be quite different from the application as applied to other diseases.

We strongly urge that the word occupational therapy should be used synonymously with psychotherapy, or at least should be applied as psychotherapy is required. In that field, as Dr Hunt says, it fails to cover the entire requirements of the individual and yet at the same time contributes a very strong aid in the contented control of the patient in the institution for the right length of time. I should say that occupational therapy, used by and large, could never be hoped to add very much radical curative benefit to much more than five per cent. of the cases, certainly as judged by those who come to the private sanatoria.

There is a phase of occupational therapy which leads to something far better. The after-care of the case of tuberculosis I presume still remains the great problem. The difficulty of fitting the patient for the industrial life which he must lead, still remains the problem in tuberculosis. I am strongly inclined to claim that the most encouraging thing in regard to the practice of occupational therapy is its likelihood of leading up to occupational adaptation of the consumptive. As a definite, constructive plan in our treatment of tuberculosis, occupational adaptation has a great interest for the institutions to take upon themselves. Physicians in the past have mainly concerned themselves with making patients physically fit to face industrial occupation. But that is not enough. With 75% of the cases entering sanatoria being moderately advanced and advanced, it is perfectly evident that the great mass of cases coming to our hands at present are not able to return to their former occupations. It seems to me that our next great step is to try to concern ourselves with adapting the physical condition and the future occupation. We should so interest ourselves in occupation and industry that we can sympathetically assist our patients toward a suitable industrial livelihood. By the fine adjustment of occupational fitness and physical fitness we can relieve after-care problems and prolong lives of our patients. By working toward these ends occupational therapy can serve an important purpose.

Dr. Edward O. Otis, Boston: There is one point which I believe Dr. Hunt did not refer to in his admirable paper and which I think should be borne in mind in occupational therapy, particularly in a state or city institution, and that is that whatever is made by the patients should be something readily saleable, and the amount paid the patient, minus the cost of the material.

It has been mentioned that the Boston Tuberculosis Association was instrumental in initiating this work at Mattapan, and such articles as were made, such as baskets, bead work, etc., were referred to that Association for disposal. It was found, however, that it was difficult to dispose of these things, and the question came up as to what the patients could make which would be more readily marketable. This I think is an important consideration in the planning of occupational therapy, for the patient will obviously take a greater interest in his work if he knows that he is making something that can be readily sold and he will receive the return.

Dr. Timothy J. Murphy, Boston: I think a distinction should be made in the kind of occupational therapy for the various classes of tuberculosis. Dr. Crane's cases evidently may be classed in the more recent type of tuberculosis. This class enters a sanatorium such as Rutland. Of course they are more taken up with their speedy cure. As Dr. Kelley has said, the earlier we get these cases the quicker we get them well. At Mattapan, on the other hand, we have the far advanced cases—the case that has been arrested and reactivated again. In the far advanced stage there is practically no hope for the return of the patient to his former occupation. You can see from a report of the staff, which Dr. Hunt has read here, which Dr. Locke and I have made to the trustees, when these people are given work with financial remuneration—some money coming in—it had helped more than any other one thing. If some type of work could be furnished so that these patients might earn a few dollars and send them to their families it would indeed be an ideal occupational therapy.

Dr. Henry Colt, Pittsfield: I was very much interested in hearing this paper on occupational therapy. I happen to be connected with a very small sanatorium in Pittsfield. We have just recently started a teacher there, mainly in the craft work—the making of baskets and small articles, and I was curious and interested to see how it was going to work out. A few, I think, have taken an interest in it and have gone into it rather intelligently, but I am sorry to say that there are several men who look upon the matter of work as a violation of their mode of life. They feel that they have come there to be treated as sick people and not to work. I think, however, if they see some of the results that will be produced it may stimulate them. To me it is a most melancholy sight to see a dozen or more men sitting around trying to keep warm in the sun and not having anything to do. The psychic element that has been spoken of here is the one that is going to be productive of a tremendous amount of help, I should think.

Dr. H. D. Chadwick, Westfield: I think that it is a very necessary thing in order to get patients interested to see that they get some financial return for their work. Otherwise, many of them will not take part. That really was the secret of the success in the Army hospitals—the fact that whatever they made was saleable at a high price. That is why so many of the soldiers were so keenly interested in the work.

NUTRITION CLINICS AND TUBERCULOSIS

By William R. P. Emerson, M.D., Boston

President, Nutrition Clinics for Delicate Children

The following is a report of nutrition work which we have been carrying on a second year.

under the auspices of the Boston Tuberculosis Association:*

The Problem. We find, in general, that all children who are habitually seven per cent. underweight, for their height, are retarded in their growth at least one year. These undernourished children are a special problem in tuberculosis work, because there is good evidence that the problem of nutrition is the problem of tuberculosis. If one does not wish to go as far as this statement would lead him, he must admit, at least, that nutrition is an important part of the problem of tuberculosis. Our object in carrying on nutrition classes, with children in homes registered at the Out-Patient Department of the Boston Consumptives' Hospital, has been to get these children well in their own homes by meeting them in groups or classes of twelve to twenty each, once a week, at 13 Dillaway Street, where they are weighed and checked up, to see if they follow directions, which have previously been given them, as regards their food, activities, and habits of living. These children come to us in a few instances through the agency of the tuberculosis nurses, who have been asked to bring in all those who are undernourished. However, of the 189 children, weighed and measured, only a small percentage came from this source. It was found necessary to have our nutrition worker go to the Out-Patient Department Saturday mornings, weigh and measure such children as came in to report, and thus the group was obtained. The following is a report of children under treatment during the past year, including their rate of gain:

Number examined October 1 to June 1	189
Underweight 7% or over	43
Normal weight	146
Overweight	0
Underweight enrolled in classes	33
Malnourished cases less than 7% underweight	7
Total membership of classes	40
Eliminated	5
Range of week's attendance	4 to 33
Average week's attendance	20
Cases carried over from last year	15
New enrollments	25
Boys	6
Girls	34
Monday class	23
Wednesday class	17

AVERAGE NUMBER OF PHYSICAL DEFECTS.

	OLD CASES	NEW CASES	BOYS	GIRLS	TOTAL
All defects	6.3	7.3	8.7	6.6	6.9
Naso-pharyngeal	2.7	3.0	4.0	2.7	2.8
Av. age			10.3	10.6	10.6
Per cent. underw't			10.8	9.2	9.4

PER CENT. ACTUAL GAIN OF EXPECTED GAIN.

Monday class	239%
Wednesday class	134%
Old	167%
New	206%
Boys	99%
Girls	204%
All	190%
14 cases having 4 or more naso-phar. defects	194%
26 other cases having less than 4	245%
19 cases having each 7 to 13 defects	172%
21 cases having each 2 to 6 defects	206%
100% to 150%	8 cases
150% to 200%	7 "
200% to 300%	6 "
300% to 400%	6 "
400% to 500%	1 "
500% to 600%	0 "
600% to 700%	1 "
700% to 810%	2 "
Less than 100%	9 "
	40 cases

This table shows that despite the unfortunate conditions under which we have worked, members of the classes, made up of children habitually below the normal rate of gain in weight, have been brought up to an average of nearly double the expected weight increase for their various ages. Forty per cent. of the membership have made progress at the rate of more than 200%. and ten per cent. at more than 400% of the normal gain.

We do not consider these results satisfactory, and have been able in a neighboring Out-Patient Clinic to secure an average for the entire class of nearly five hundred per cent., while in another class, conducted under specially favorable conditions, the rate has been 673%.

It is then necessary to inquire why this particular group has been able to make less than half the progress accomplished in the other class.

It may be helpful to state the factors concerned as the four sides making up a parallelogram of forces, which, when properly coördinated, insure for the child the essentials of health, namely, the removal of physical defects, securing home control, preventing overfatigue, and securing good food and health habits. On the one side, are those forces concerned with the home: on another, those coming under medical care: a third includes those of the school; and the fourth, the child's own interest.

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* The results obtained [illegible] faithfulness and efficiency of the nutrition worker, Miss Geraldine [illegible] the perplexing problems of these homes [illegible] children [illegible]

On the side relating to the home, we have found the lateness of the hour at which classes are held makes it practically impossible to secure the usual coöperation we have had from mothers. The children have been in school all day, and the mothers, who must walk considerable distances, are not able to return home until, in many cases, as late as seven o'clock, thus interfering with the evening meal of the family. Since March, however, one class was transferred to the Elizabeth Peabody Home, where the attendance of both children and mothers was better. We have not been able to get all the mothers to attend regularly, but where their interest was aroused by visits to the clinics, and by visits of the nutrition workers to their homes, home coöperation has been fairly well obtained.

We have found the homes in the tuberculous group to be the most disorganized of any homes we have seen in any situation. The reason for this is evident. It is the natural result of long continued sickness of one or more members of the family. Home habits become irregular. Often the food necessary for good growth has been given the sick member of the family, and the factor of overfatigue is in special evidence.

On the second side, the medical work was to examine these children to discover all defects, to give directions to have these removed, and to help conduct the classes. However, only half of the necessary adenoid and tonsil operations have been accomplished, partly, from difficulty in getting the children operated upon, as most of the hospitals have their work dated sometimes two months ahead; and we find it necessary that these children be kept over night at the hospital after the operation in order to insure safety.

In tuberculosis work there seems to be a special tendency for the physician to look for the signs of tuberculosis, at the expense of the general physical examination. The physical defects in this group averaged nearly 15 per cent. more than that found elsewhere, and it has been surprising what a large number of adenoid and tonsil operations have been found necessary.

In regard to the child's own interest, it has been remarkable how keen these children are to become well and strong. Even late in the spring, they came in with almost an attendance of 100%, even after school, when the temptation to be out of doors and at play was very great. There is, however, a constant drawback, due to the fact that the children who attend the clinics are said by their mates to have the "pip"—their name for tuberculosis.

Our chief difficulty, however, in this work is still the school program. We have been able to get only about 50% of these children relieved from school work, even for a short time, two to four weeks in the school year, and when so relieved they have been obliged to make up this work. In the case of one little girl, during the time that she was excused, her home lessons were such that we found her sitting up until eleven o'clock at night, in order to get her work done. The attitude of the school authorities has been, with a single exception, that health is more than schooling, but the working out of our school system is the reverse of this. When the particular question has arisen as to whether one of these undernourished children should be relieved of school work, the decision has been in favor of schooling, that is, the child must continue his attendance or else fail to be promoted. Even in the case of children who have been to the sanatorium at Westfield, or in the hospital with active tuberculosis, they have been compelled to carry out a school program designed for well children, although on the waiting list to go back to the sanatorium. The authority for excusing these children rests with the school principal, whose point of view too often is that unless these children are sick in bed, they are just as well as other children, especially if they have attended our classes, where their condition has temporarily improved. Two of our most severe cases of malnutrition, I find, are compelled to attend summer school, in addition to being refused any relief from the work during the past year. An argument of the school authorities has been that the school is more healthful than the street or the home. However, we have not found this to be the case. Children can be made to gain rapidly if they can be relieved of school pressure from half past ten to twelve in the morning, when they can go home and get a light mid-morning lunch and a rest period. This break in the day prevents overfatigue and allows the child to gain, ensuring that during his periods of activity and work he shall be at his best and have opportunity to recuperate by means of rest and lunch periods before he is "run down." His failure to gain while in school does not seem to be altogether from the extra work imposed upon him, but from the stress and tension of the classroom. A Chicago principal actually reports higher marks in the studies of one of our nutrition classes even on the lessened time for work.

Another argument of the school authorities is that school inspection should take care of this group of children. That it does not do so is evident from the large number of these malnourished children, which, conclusive evidence shows, remains at about 30%.

School inspection in Boston compares favorably in many respects with the best work done in any of the cities. In the detecting of malnutrition, however, it has constantly run below such cities as New York and Philadelphia, for instance. But a school physician who has two to five thousand children under his care can do little more than meet the minimum requirement, namely, to protect the school from contagious diseases, and suggest the correction of such physical defects as he may discover on such rapid examination as he can make, without the removal of clothing. Such rapid inspection cannot discover malnutrition, which even in hospitals will escape the specialist in children's diseases, because malnutrition is not a medical diagnosis. The usual physical examination discovers defects in vital organs, but does not take into consideration the essential physical signs of malnutrition.

If the school physician works under such serious conditions of disadvantage, how can we expect the school principal, who alone has the authority to grant the relief essential to restoring these children to health, to consider this relief as other than a special favor to be set aside that more time may be spent upon school work?

The result is that the city is spending money on requirements which make the children sick, and then appropriates more money for sanatoria in which they may be made well.

The Nurse. The nurses employed by the organization have not been able to assist to the extent we consider necessary to success. As a class, their training can be compared favorably with that of any other group of nurses. However, we must remember that the training of nurses is mostly for bed-patients, rather than for nutrition work, and the demands made upon the visiting tuberculosis nurse are unlimited; therefore, it is easy to understand her point of view when she is asked to assume any new duties in addition to her already crowded schedule. She is apt to consider it a fad that will pass and, therefore, unless her directions are definite, and she is relieved of other duties of less importance, she does not become a help in this nutrition work. From out point of view, more than 50% of the work done by visiting nurses is sheer waste. The conscientious visiting nurse is called upon to do so much work, with no measure for her results, that the task becomes discouraging. This explains why in many of these families nurse after nurse has made visits and secured practically no results.

Conclusion. The problem of tuberculosis is for the most part the problem of nutrition. If children can be made well in a sanatorium, they get health; but if they can be gotten well in their own homes, they get health, plus health education, plus character. Nutrition work, which covers a new and hitherto neglected field in medical work, must be carried on with proper authority. It cannot fit in as an adjunct to other programs, but other programs must be adjusted to fit the problem of nutrition, which is the fundamental problem of tuberculosis. In this work, during the past year, we have shown that we can get children not only to come up to the normal rate of gain, but double it, even under the discouraging circumstances we have mentioned. With the proper coöperation of the four factors that safeguard the child's health, namely, the home, the medical work, the child's own interest, and the school, all these children should rapidly be brought up to normal health. To bring them up to normal health is an opportunity for rehabilitating the whole family and adjusting it to its proper relation in the community.

DISCUSSION.

DR. H. D. CHADWICK, Westfield: I wish we had time to spend in discussing this paper of Professor Emerson. There is nothing more important than the subject of malnutrition in children. The sanatoria, by statistics, by analysis of condition of discharged patients, show that only about one-third of the discharged adult patients from sanatoria became permanently useful. I do not believe we can do anything better than that as time goes on. We must attack the problem in other ways—first by discovering the early cases. The sanatoria do not get them early enough and they do not stay long enough. Then we do not begin early enough to find them. We have got to begin in childhood to prevent the development of the disease instead of putting so much effort on curing the disease after it has once become established. The work of Dr. Emerson deserves to spread and become universal.

One thing I would like to say about the school. We find at Westfield that a child can go two hours a day and keep gaining, in the sanatorium school. The same thing could be done in public schools provided they are adjusted to meet the physical defects of the children. The children could then rest at home in the afternoon.

Book Reviews.

Textbook of Chemistry. By R. A. Witthaus, A.M., M.D. Seventh Edition. Revised. New York: William Wood and Company. 1919.

The general plan and purpose of the seventh edition of Witthaus's *Textbook of Chemistry* remains the same as in previous editions. The book is intended primarily for the medical student, for use both in preparatory school and throughout his college course. The introduction explains the general properties of matter, the special properties of solids, liquids, and gases, some physical actions of chemical interest,—such as heat and electricity,—and various chemical phenomena. The section dealing with inorganic chemistry aims to give the student not merely a vast supply of isolated facts, but the fundamental principles of chemistry, so that his mind may be trained to reason out problems for himself. The typical elements, hydrogen, oxygen, and their compounds are discussed; and the properties of elements which form no compounds, and acidulous, amphoteric, and basylous elements are analyzed. The section on organic chemistry is arranged with regard to the most complete information on the relationship of substances. The principles of organic chemistry are deemed particularly important by the author because of the close connection of this subject with physiology and modern pharmacy. In this section, equations showing the Grignard reactions have been introduced. In the present revision, sections on Physics and Physiologic Chemistry have been omitted, because special textbooks on these subjects are readily available. Where it has been necessary, new material has been added throughout the book. Medical students will find this volume a valuable textbook; the subject is systematically arranged and is presented in the clearest and most comprehensive form.

The Organs of Internal Secretion. By Ivo Geike, M.D., M.R.C.S. New York: William Wood & Co. 1919.

The purpose of this volume, *The Organs of Internal Secretion*, is to present a short survey of the organs of internal secretion, their diseases, and the uses which may be made of preparations of the hormone-producing glands and of organic tissue generally. The usefulness of the book is indicated by the appearance of this second edition only a little more than a year after the first publication. This edition has been revised, and there has been added a chapter discussing the relation of the internal secretions to functional nervous disease. The characteristics, secretion, functions, and disorders of the thyroid and parathyroid glands are considered: and the etiology, symptoms, prognosis, and treatment of exophthalmic goitre, and the characteristic features of thyroid deficiency are enumerated. The structure and physiological functions of the pituitary gland and methods of treating its disorders are discussed. The adrenal glands and the clinical conditions of hyperadrenia and hypoadrenia, the pancreas, and the internal secretions of the sexual and digestive organs are described. The author summarizes the therapeutic value of organic extracts and expresses the belief that organotherapy offers a promising field to the medical profession.

Advanced Suggestion. By Hayden Brown, L.R.C.P. New York: William Wood & Co. 1919.

The purpose of this volume on *Advanced Suggestion* is to bring to the attention of the profession certain views which the author believes will be of great value to the therapeutic endeavor of the future. He explains his method of treating disorders by neuroinduction, and contrasts it with hypnotism. Examples are cited of cures which have been made by this treatment; they include neurotic disorders, such as insomnia, hysteria, epilepsy; disturbed conditions of urination and of the generative organs: and various forms of psychoses, such as dementia praecox and melancholia. The author claims to have restored by suggestion the functions of smell, taste, hearing, sight, and color-blindness, and to have corrected, also, disorders of the alimentary tract, of the heart and circulation, of gland functioning, pulmonary diseases, gynaecological difficulties, and criminal inclinations. The author's claims for the power of suggestion are great; the future will determine his ability to convince his readers of the status of neuroinduction in medical science.

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OBSTETRIC PRACTICE IN THE STATE.

The Journal has reserved for special comment the letter of Dr. Charles Malone, published on September 2nd, regarding the mortality of childbirth, because it contains a plain statement of fact and a clear suggestion for a remedy of existing conditions.

The first two paragraphs of this letter read thus:

> "It does seem to me that an unfair comparison was made in your editorial of August third in regard to the considerably lower mortality of maternity patients treated by Harvard students at the Lying-In Hospital and those treated throughout the State by the profession.
>
> "As I understand the situation, patients register at the Lying-In Hospital, are examined; the cases that are complicated by disease or those cases which promise to be hard are taken into the Hospital; those that are normal are delivered outside by the students."

With this view the Journal agrees absolutely. It wants to see the medical profession of the State put in just as advantageous a position as are the Harvard medical students of today. It wants to see the general practitioner caring for the normal case, but it does not wish to see the general practitioner left to battle alone, unprepared, and under most disadvantageous conditions with the abnormal case.

The first requisite is that the abnormal case be detected beforehand. The need of this both the public and the practitioner must recognize in greater degree than at present. For this reason great emphasis has been laid on the need in any proposed legislation of requiring a patient to apply for maternity aid a sufficient number of months before the date of expected delivery. But in how many communities throughout the State will this make material difference at the present time? Does not the need lie rather in pregnancy clinics, in maternity hospitals, and in the specially trained obstetricians who can act as consultants and advisers for the general practitioner? If such clinics and consultants could be established throughout the State, just as they are now established for tuberculosis, would not the general practitioner be placed in as advantageous a position as are the medical students? We do not for an instant maintain that the students are as well qualified to care for the patient as are the physicians, but we do want to see the handicap of the physician taken away. We do not want to hurt his practice. The State consultant in tuberculosis is to help him. The obstetric consultant should help him, and relieve him of much anxiety and strain.

The Journal feels that the ominous and steady increase in the maternal death rate will impel the Legislature to some definite action. As physicians, we must give advice as to how existing conditions may be improved. The Journal asks for further discussion through its columns. It feels that it is futile to ask that no action be taken. If action is to be taken, two avenues are open. There is a very strong sentiment throughout the State for direct financial aid to poor mothers. There is another sentiment for treating the question of maternity aid as a public health problem, making the granting of financial aid an object only where it will better the health of the patient. No bill yet presented meets the health problem entirely satisfactorily.

Unless we as physicians can agree along general lines, the decisions will be made independent of us.

THE FORMULATION OF A STANDARD SANITARY CODE FOR RAILWAY CARS.

An important advance toward preventing the distribution of disease has been made by the formulation by various national health agencies of a standard railway sanitary code. The work was begun originally by the committee of health and medical relief of the United States Railroad Administration, and a plan was submitted to the Surgeon-General of the United States Public Health Service to be brought into accord with interstate quarantine regulations. The code has been approved by State and Provincial Officers of Health and recommended to the several states of the Union for legislative action.

Public Health work has been made difficult because of the ease with which travel is accomplished and the wide radius of individual action. The fact that there has been no uniformity of regulations within the different states and no established custom prevailing over wide areas has been a serious handicap in controlling infectious diseases. The proposed sanitary regulations will tend to eliminate the danger of distribution of disease. Any person known or suspected to have plague, cholera, smallpox, typhus or yellow fever will be forbidden to apply in person or through some one else for transportation by a common carrier; transportation will be refused such persons. For cases of diphtheria, measles, scarlet fever, cerebrospinal meningitis, poliomyelitis, mumps, whooping cough, influenza, encephalitis, pneumonia, septic sore throat, rubella, or chicken pox, a separate compartment will be required which will provide an accompanying nurse and be subject to special care, including the disinfection of dishes and the destruction of sputum. Further requirements will be made for cases of typhoid fever and dysentery. Patients with leprosy must obtain official permits to travel. Tuberculous persons must have means of caring for sputum and be provided with gauze or other material with which to cover the mouth while coughing. Conveyances or compartments must be cleansed thoroughly before being used again, and bedding, blankets, and linen must be laundered or disinfected before being redistributed.

The proposed sanitary code offers suggestions for controlling water and ice supplies, for the cleansing of railway cars or conveyances while in service, and also for the regulation of sanitary conditions at railway stations. Although in some instances railway companies have established on their own initiative sanitary codes not unlike the proposed standard code, the universal adoption of standardized regulations is necessary both for the protection and for the health education of the public.

MEDICAL NOTES.

Appointment of Dr. Helen MacMurchy.—Dr. Helen MacMurchy of Toronto has received an appointment as director of the Division of Child Welfare in the Federal Department of Health, Ottawa.

Collection of Type Cultures at the Lister Institute.—It has been announced in *Nature* that the British Medical Research Council has established recently at the Lister Institute of Preventive Medicine a national collection of type cultures from which biologists and bacteriologists may obtain authentic strains of recognized bacteria and protozoa for use in scientific work. Dr. J. C. G. Ledingham is in charge of the work. There will be collected and maintained bacterial strains from all departments of bacteriology—human, veterinary, and economic. The members of the staff are directing their efforts at present particularly towards the securing of fully authenticated strains responsible for or associated with disease in man and animals.

War Memento for American Surgeons. Announcement has been made in *The Medical Press and Circular* that as a memento of the work done in coöperation by American and British surgeons during the war, a number of the latter have had made a silver-gilt mace, which is to be presented to the American College of Surgeons (which includes Canada as well as the United States).

The mace is the work of a well-known worker in metal, Mr. Omar Ramsden. A surgeon's mortar dug up in a Salonika trench was the model for the head, which is surrounded by maple leaves and American eagles. The badges of the British and American Army Medical Corps and the serpents of Æsculapius are prominent, the name of Philip Syng, the father of American surgery (who was at St. George's Hospital before he went across the Atlantic, is introduced, and the roll of subscribers will be engraved in due course. An inscription on the mace reads: "From the consulting surgeons of the British Armies to the American College of Surgeons in memory of mutual work and good fellowship in the Great War."

Warning Against Communicable Diseases.—In the issue of the *New York Times* for August 8, it was stated that the Department of Health called attention to the decision of the Nebraska Supreme Court to the effect that a physician is not compelled to maintain secrecy in the case of communicable disease when the health of other persons is endangered by so doing. In the case referred to, the Court granted a verdict in favor of the physician who, after advising the patient to remove himself from contact with other persons and to isolate himself, warned an exposed person of the danger. The following opinion was issued by the Court:

"In making such disclosure a physician must also be governed by the rules as to qualifiedly privileged communications in slander and libel cases. He must prove that a disclosure was necessary to prevent spread of disease; that the communication was to one who, it was reasonable to suppose, might otherwise be exposed, and that he himself acted in entire good faith, with reasonable grounds for his diagnosis and without malice."

American Climatological and Clinical Association.—The following officers were elected at the annual meeting of the American Climatological and Clinical Association: President, Dr. Carroll E. Edson, Denver; vice-presidents, Dr. Nelson Estes Nichols, Portland, Maine, and Dr. Gordon Wilson of Baltimore; recorder, Dr. Cleaveland Floyd, Boston. Dr. Edson is a former editor of the Journal.

Meeting of the American Public Health Association.—At a meeting of the American Public Health Association in San Francisco on September 13-17, the following subjects will be considered: Relative Functions of Official and Non-Official Health Organizations; Western Health Problems; Narcotic Control; Food Poisoning; Organization for Child Hygiene; Mental Hygiene; Health Centers. These subjects and others will be distributed among the following ten sectional groups: General Sessions; Public Health Administration; Laboratory; Vital Statistics; Sociological; Sanitary Engineering; Industrial Hygiene; Food and Drugs; Personal Hygiene; Child Hygiene.

Paris Faculty of Medicine.—It has been reported in *The British Medical Journal* that professors of the Paris Faculty of Medicine have been placed in two classes according to their seniority, those in the first class receiving a salary of 25,000 francs and those in the second class a salary of 23,000 francs. By a recent ministerial decree Professors Richet, Pouchet, Hutinel, De Lapersonne, Gilbert, Roger, Nicolas, Ribemont-Dessaignes, Quénu, Prénant, Widal, Chauffard, and Weiss have been put in the first class, and Professors Delbet, Marfan, Hartmann, Bar, Marie, Broca, Teissier, Desgrès, Lejars, Achard, Robin, Legueu, Letulle, Couvelaire, Carnot, Besançon, Vaquez, Dupré and Jeanselme in the second class.

Increase in Medical Students in Germany.—It has been reported that there is at present an extraordinary increase in the number of medical students in Germany. Whereas in the summer term of 1907 there were 7,500 and in 1914, 15,660, in 1919 their number exceeded 19,000. As the number of medical men in 1913 was 34,000, it may be calculated that there will be approximately 48,000 in 1925. Female students and practitioners, whose numbers are constantly increasing, are not included in these figures.

Proposed Institute for the Study of Tropical Diseases.—As a memorial to the late Major-General William C. Gorgas, former surgeon-general of the United States Army, it has been proposed that an international institute for research in tropical diseases be established at Panama. Panama has been chosen as the location for the proposed memorial because of the fact that General Gorgas's most noteworthy health work was accomplished in that country. It is hoped that the sanitary work so far advanced during the life time of General Gorgas may be continued by means of study made possible by such an institute. It has been announced that the Panama Government is willing to donate the St. Thomas Hospital for the use of the institute.

All-American Conference on Venereal Diseases.—An All-American Conference on Venereal Diseases is to be held in Washington.

D. C., on December 6 to 11, 1920, under the auspices of the following organizations: The United States Interdepartmental Social Hygiene Board, represented by Dr. Thomas H. Storey; the United States Public Health Service, represented by Assistant Surgeon-General C. C. Pierce; the American Red Cross, represented by Dr. Livingston Farrand, and the American Social Hygiene Association, represented by Dr. William F. Snow. The conference will deal with administrative and research problems, and will consider the attack on venereal diseases from the different aspects of medical measures, enforcement of repression and protection laws, sex education, the provision of recreational facilities. An attempt will be made to work out a feasible three-year program for each of the countries of the western hemisphere. Dr. William H. Welch, of Johns Hopkins University, is president of the conference. Preliminary organization is in charge of Paul Popenoe. The headquarters of the conference are at 411 Eighteenth Street, N. W., Washington.

The Preparation of Standards for Rat-Proof Houses.—Announcement has been made that plans for radical changes in the construction of business buildings, dwellings, and wharves are being drawn up by the United States Public Health Service as part of a nation-wide campaign for rat extermination. Health officers from various states and the larger cities, at a conference in Galveston and Beaumont, Texas, to study bubonic plague and rat extermination, recommended to Surgeon-General Hugh S. Cumming that standard specifications for rat-proof buildings be drawn up by the Public Health Service. These are to be furnished to the different states and cities in order that they may be incorporated in the building codes throughout the country.

"While bubonic plague is under control in this country, there will always be scattered infection until the rat can be exterminated," said Surgeon General Cumming. "The most effective measure is permanent rat proofing of all buildings. Plans for this may easily be incorporated in any new construction. While the Public Health Service can concern itself directly only with the problem of plague prevention, there is an important economic problem that enters into this situation, due to the fact that at the present time, according to authoritative estimates, there is one rat for every one person in the United States. To maintain this huge number of rats costs the people of this country approximately one cent per person every day for rat food, an intolerable and unnecessary burden for the people to carry."

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending September 4, 1920, the number of deaths reported was 195 against 183 last year, with a death rate of 13.59 against 11.98 last year. There were 54 deaths under one year of age against 35 last year.

The number of cases of principal reportable diseases were: Diphtheria, 21; scarlet fever, 11; measles, 8; whooping cough, 26; typhoid fever, 4; tuberculosis, 37.

Included in the above were the following cases of non-residents: Diphtheria, 2; scarlet fever, 3; typhoid fever, 1; tuberculosis, 2.

Total deaths from these diseases were: Diphtheria, 1; whooping cough, 1; tuberculosis, 13.

Included in the above were the following cases of non-residents: Diphtheria, 1.

Infantile paralysis cases, 22; deaths, 9. non-residents: cases, 7; deaths, 3.

The Harvard University School of Medicine.—The Harvard University School of Medicine has received $350,000 from the Rockefeller Foundation for the development of psychiatry, and $300,000 for the development of obstetric teaching.

Infant Mortality in Massachusetts.—An analysis of the infant-death records in Massachusetts for the past year has been made by a special commission on maternity benefits. The report shows that ten thousand and fifty-three children under one year of age died in this State during 1919; more than fifteen hundred of these deaths occurred before infants had reached the age of one day. Statistics show that one person in every ten dies in early infancy in Massachusetts. In New Zealand, only one in twenty is lost, while the latest statistics from Russia report that one person in four dies in infancy in that country. The death rate is higher among male babies than among females. 5,670 of the former, and 4,383 of the latter, being the totals for last year. The causes of infant deaths in this State during 1919 are as follows: Congenital debility, prematurity, icterus, and sclerema, 2,041; malformations, 661; accidents of labor, 799; respiratory diseases (bronchitis, broncho-pneumonia, etc.), 1,321; intestinal diseases, 1,394; all other causes, 2,623.

On August 24, the special commission for the investigation of maternity benefits opened a series of public hearings at the State House. The members of the commission are Dr. Alfred Worcester, president of the Massachusetts Medical Society; Dr. Eugene R. Kelley, commissioner of public health; Robert W. Kelso, commissioner of public welfare; Edward E. Whiting and Mrs. Helen Macdonald.

Brockton Hospital.—The events of the year 1918 tried the courage, patriotism, and fidelity of all administrators of hospitals. The report of the Brockton Hospital indicates that it was no exception. Because of the departure of so many of the doctors and nurses for service overseas, those left at home found their duties very much harder than usual. It is a source of satisfaction to the Hospital, however, that so many rendered noteworthy service both at home and abroad.

The first influenza epidemic came in September. At that time the disease was most virulent and a number of patients were lost as well as six of the hospital nurses. Nineteen of the twenty-five nurses were ill by the first of October and it then became necessary to refuse admittance to more patients of any kind. During the second attack of influenza, in November and December, these cases were not received, since the authorities advised against these patients being in a hospital with other patients. Through the efforts of the Board of Health and many volunteers, the epidemic was completely and quickly mastered.

In spite of these drawbacks the number of patients treated in the wards during the year 1918 showed an increase of 39 over the previous year, being 1,085 as compared with 1,046. In the Out-Patient Department the number of patients treated rose from 605 to 1,101, an increase of nearly 500, or 82 per cent. Both the medical and pediatric services showed a fairly large percentage gain.

A new ward building with a normal capacity of 120—140 without crowding—was completed during the year. This building is modern in every way, of fireproof construction, equipped with an electric bed elevator and many other details which adapt the plant to hospital usage. The doctors of the vicinity have inspected this new ward, approved it, and pledged coöperation in the use of it.

Conditions at Brockton Hospital were vastly improved during the year 1919. The "new hospital" treated 3,000 patients, 1,717 of whom were in-patients. The Maternity and X-ray Departments increased their services to a considerable degree.

The receipts of the Christmas Campaign for $15,000 were $30,000, so that the Treasurer's report of January 1, 1920, shows a cash balance of $10,668.07. The Training School of the Brockton Hospital offers a three years' course to young women who wish to learn the science and art of nursing. The theory is given by lectures, demonstrations, and examinations given by well-qualified instructors, each a specialist in his department. Practical instruction is given in class room demonstration and by graduate nurses on the wards. The curriculum is planned to give a thorough knowledge of the sciences upon which nursing is based, to develop technical skill, a well-trained mind, good observation, and high ideals of nursing. There have been seventeen pupils graduated, five of whom remained in the hospital as supervisors and head nurses.

NEW ENGLAND NOTES.

Appointment of Mr. Friend Lee Mickle.—Mr. Friend Lee Mickle, bacteriologist of the Bureau of Laboratories of the Connecticut State Department of Health, has received an appointment as director of laboratories for the Bureau of Health of Atlantic City, New Jersey.

RECENT DEATHS.

Dr. John Morgan died suddenly at his summer home and birthplace, Hadlyme, Conn., August 28, 1920. He was born in 1845, graduated M.D. from the Yale Medical School in 1869 and settled in general practice at Middletown, Conn. He moved to Springfield, Mass., and joined the Massachusetts Medical Society from that city in 1885. After ten years he settled in Boston, where he had a very large practice in ophthalmology for twenty years. He was the victim of a blackmailing suit for malpractice, where the jury rendered a verdict for damages in a very large amount. In January, 1916, Dr. Morgan returned to Hadlyme, Conn., and opened an office in New York City; he also had an office in Hartford, Conn.

Announcement has been made of the death of Professor Felix Guyon, a former president of the Paris Academy of Medicine and head of the Hôpital Necker. He was known especially for his work on the diseases of the urino-genital organs.

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PUERPERAL SEPSIS AND ITS TREATMENT.*

BY R. S. TITUS, M.D., BOSTON.

ALTHOUGH it is perfectly well recognized by the great majority of physicians that puerperal sepsis is a wound infection, there still exists much more sepsis than there should, and the treatment of puerperal sepsis, among many general practitioners, is not improving its mortality. The majority of older physicians still adhere to thorough active uterine interference in all cases of febrile complications in the puerperium. This is due almost entirely to a lack of appreciation of the pathology and bacteriology of the condition. All treatment nowadays, in all types of diseases, depends upon a knowledge of the pathology of the disease and an understanding of the bacteriological reaction characteristic of each bacterium. When one has this fundamental knowledge to go on, the treatment must necessarily be a rational treatment.

Puerperal sepsis is as old as child-bearing. It has always existed and undoubtedly will always exist, but let us hope that its percentage will continually become less as the condition is better understood. Until Semelweiss, in 1847, told the world that puerperal sepsis was a disease caused by the introduction of dead material from without, nothing definite so far as etiology was understood. He worked before bacteriology was known and it was upon a vast clinical experience in the dead house, the delivery room and association with many students that he came to the conclusion that the unclean examining finger was the contaminating source. The simple procedure of chlorine disinfection of the hands lowered the mortality from puerperal sepsis in his clinic at Vienna in the first year of his régime to a point never before obtained. His great work was not appreciated until his death.

More modern advances in the etiology of puerperal sepsis are due almost entirely to bacteriology. We now know that it is not the introduction of dead material, but that it is the introduction of living bacteria into the genital tract at the time of labor that causes this scourge. We still must believe that the vast proportion of sepsis is so caused but it is only fair to assume that there are a few cases which do not fall under this heading. I refer to the patient who has never been examined in whom a possible extraneous contamination can absolutely be ruled out, who develops sepsis after delivery and dies. It is ignorance in such cases to assume that she, too, must have become infected from without. The explanation of such sepsis may be found, (1) in the abnormal character of the vaginal flora existing at the time of delivery; (2) in a focus of infection from outside the pelvis.

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* Read before the Obstetrical Society of Boston, Oct. 21, 1919.

It has been contended for some time that all vaginal secretions should be acid at the time of labor; that the acidity is due to an organism not unlike the lactic acid bacillus: that the presence of this organism in the vaginal secretion diminishes in numbers and virility pathogenic bacteria. It is also well known that all vaginas harbor strains of pathogenic organisms during pregnancy and then when this acidity is absent the virulence of these organisms is much increased. This fact alone may well explain, and rationally, sepsis developing in the unfortunate patient who has never been contaminated by outside infection.

There is one other class of septic cases whose cause lies outside the introduction of bacteria by vaginal examination. Ten years ago it was not known that a patient might become septic from tonsillitis. Now it is a definitely known fact that such exists. Why isn't it conceivable that the individual patient may have had at the time of labor a focus of infection somewhere else in the body which finds the engorged, theoretically traumatized pelvic organs a very likely spot for fresh infection? This is not an absolute fact, but there are rare cases in the practice of men who are surgically clean, in which infection does occur and in which it is at least plausible to assume that the outside focus may quite likely be the cause of the new infection. These latter two possibilities will cover but a few of the cases of puerperal sepsis.

It must still be inferred that it is the examining finger which carries with it by far the greatest proportion of puerperal infection.

It is not many years since pelvic infection has had in the minds of most men a place unlike that with which they held general surgical infection. They have even thought that the pelvis was a field of its own, following laws of its own, and not following the principles of general surgical fever.

Today, when the germ theory of disease is accepted throughout the world and when everyone believes that sepsis acts, irrespective of its location, in typical ways, it is unintelligent to assume any such premise. The reaction of tissues in other parts of the body to bacterial infection depends almost entirely upon the type of organism which is the invader; and such is so, such must be so, of pelvic infection. It is entirely unintelligent to assume that a streptococcus in the uterus will act differently or should be treated differently from a streptococcus in the arm, and *vice versa.* The streptococcus acts in just the same way, irrespective of the tissue, and consequently an intelligent appreciation of puerperal sepsis and its treatment must depend upon the rules that the individual organism has laid down for itself.

Puerperal sepsis is merely surgical fever and surgical fever by and large manifests itself in three different ways, depending upon the organism which it is invading. There are three large groups. The first: that of the hemolytic streptococcus, second that of the pyogenic organisms; and third that which manifests itself by decomposition. Hemolytic streptococci show a predilection for the blood, leaving behind them little or no local reaction. If a surgeon is unfortunate enough to prick his finger, contaminating it by a hemolytic streptococcus, the finger shows little or nothing but the constitutional symptoms which occur not infrequently as soon as twelve hours after the entry of the organism and always within thirty-six hours, are most active. The patient has a chill with temperature ranging from 104-105, extremely rapid pulse of 130-140. The finger shows nothing; consequently, treatment directed to the point of entry of the organism is of no avail. The disease is present in the blood, as is manifested by the extreme constitutional symptoms and the treatment should be directed toward the general system, the finger being entirely disregarded.

Such patients, if infected by a pure strain of hemolytic streptococci who die, show no pus; show almost no pathology so far as the finger goes, thus demonstrating the folly of local treatment. If this is true of surgery of the finger, why should it not be true of pelvic infection caused by the same strain of organism?

The typical history of a puerperally septic patient infected by a hemolytic streptococcus is something as follows: The first sign and symptom of the disease is usually a severe chill with subsequent rise of temperature to 105 or 106 and a rapid pulse. These occur very acutely. The onset is in no way gradual. It may occur as soon as 18 hours after delivery: almost always before thirty-six hours, and it is fair to say that those cases so infected, showing the initial sign after forty-eight hours, are very rare indeed.

By palpation at the onset of the disease the uterus is normal; it is firm; it is not tender, and the lochia is unchanged. To be sure, the uterus unfortunately has been the entrance of the infection. The placental site of the uterus is a raw traumatized area. It invites infection and if there are organisms which can invade, it is only natural that this is the point that they should attack. But in the infection which shows these constitutional signs so quickly, the organisms penetrate the musculature of the uterus directly into the blood stream and it is in the blood stream that they are and not the uterus. Treatment directed to the uterus itself is illogical. There is nothing in the uterus to attack; the infection has got beyond the uterus by the time the constitutional signs have presented themselves and all treatment should be constitutional. Fresh air is the first essential. Such patients should be out doors if posible or at least in a room filled with fresh air and sunlight; they should have all the nourishing food they can take; plenty of fluids; ordinary cartharsis and sedatives to induce sleep. The high temperature is controlled by cold baths and alcohol sponges rather than by anti-pyretics and empirically the patient is sat up in bed to favor drainage. Then simply because of the possibility of infection being a mixed one, ice and ergot; ice to the fundus and ergot by mouth in drachm doses are both used empirically for the same reason; to favor involution and to hasten drainage. The patients who die of this infection die of cardiac failure and the pulse in consequence is the most important guide as to the patient's condition. By no means all of these patients die. Those who die will die within a week, and thus by that time, if the patient is going to get better, the pulse begins to show its downward tendency, and as is true of all pure hemolytic infections autopsy reveals no pus.

The main fact is that a constitutional infection, a blood infection, should be treated constitutionally. The point of entry bears no real importance, for by the time the symptoms appear the organisms are in the blood. Tonsils causing hemolytic infection are not taken out, they are left alone. Why is it any more logical to treat locally a uterus through which the organisms have gone?

Pyogenic organisms invariably show a local infection first, even though they may later become general septicemia. In consequence, the constitutional symptoms are slower in appearing and usually more gradual in their ultimate reaction. It is perfectly analogous to compare an ordinary septic infection on the finger or arm with an infection by a like organism in the pelvis. Any infection on the finger or arm may have redness, heat, induration and swelling. It may go no further. On the other hand, this local condition may develop pus, in which case there is definite fluctuation or pointing of the abscess. Another infected finger may show the early signs of infection but may not form local pus but extend up the arm with a cellulitis lymphangitis and enlarged glands in the axilla. This condition may go no further or it may spread into the general circulation, the patient becoming generally septic, and lastly, may develop pyemia.

If the organism infecting the finger is not a virulent one the most that can come of this infection is a localized abscess. Many such infections result in nothing but redness and swelling and go down without the formation of pus. If the organism, on the other hand, is more virulent it is very apt to spread up the arm and it will develop signs of cellulitis lymphangitis axillary infection and general sepsis, as the case may be.

It is unreasonable to suppose that the constitutional symptoms of these various grades of infection by pyogenic organisms are equal in intensity. That which causes nothing but localized signs without pus formation will give almost no constitutional symptoms. That which shows fewer local signs but does spread up the arm and eventually into the general circulation, will show very serious symptoms and so it is in the pelvis. All pyogenic organisms do not react the same; some cause serious constitutional reactions and others almost none at all.

The uterus and the arm are again analogous. Some uterine infections of pyogenic source never get beyond the uterus, some extend by continuity into the round ligament, or gravitate to the fossa of Douglas. Some follow the lymphatics up to the kidney, and develop perinephritic abscess; others get into the blood.

forming phlebitis or general sepsis: some attack the tubes and ovaries. Whether they remain in the uterus or extend outside depends upon the number and virulence of the infections against the resistance of the patient. This resistance of the patient is really "*nature*," and nature's defence against the invader is the pathology of infection, a leucocytic wall about the point of infection.

The common pyogenic organisms that infect the genital tract are the streptococci, the staphylococci, colon bacillus, pneumococci, gonococci, and diphtheria organisms, the last of these is not commonly seen, although it is a well established fact that diphtheria can infect the vagina at the time of labor.

The streptococcus, of course, is the most virulent of the various types of pus-forming organisms. Its onset is more abrupt than the others, but its initial rise in temperature does not occur so soon after labor as does that of the hemolytic streptococcus, but when it does occur, it is very apt to be preceded by a chill, the temperature immediately after rising abruptly to 103 or 104. This usually does not occur until thirty-six hours and may be deferred as long as seventy-two after delivery. The organism being in the uterus showing its first manifestations locally will result in definite *uterine changes.* The uterus is soft and larger than in the normal case. It is apt to be tender and the lochia will soon show some pus. One must think of the pathology of the condition before one attempts treatment.

Nature in her attempt to localize this condition in the uterus as it does in the finger, to prevent its spread by continuity or lymphatics, surrounds this initially infected area with a leucocytic wall. If the organism is not too virulent, if nature is adequately prepared to resist the infection, this leucocytic wall is sufficient to prevent the spread of this infection to other areas. What can we do to prevent this, even though nature were unsuccessful in her attempt to localize it? The curette was the instrument resorted to in all types of uterine infection by the medical profession a generation ago. To them all febrile conditions occurring in the puerperium were associated with abnormal material in the cavity of the uterus. It was this material which was the cause, in their minds, of the febrile state and they must remove this material if their patients were to recover. By experience they saw many of these cases curetted with the removal of something that they could see, something that was absolutely tangible and having no adequate knowledge of bacteriology, the inference in each case was that this material must be the etiological factor. In those cases in which the curette succeeded in removing nothing, it was felt that the material must be there, even though they could not get it out.

Now let us see how rational the curette is. Nature attempts to localize the inflammatory area by a leucocytic wall; pathology teaches when the curette, no matter how gently used, goes into the infected uterus, it breaks down this leucocytic wall in its attempt to remove the infection and lays open new areas for further infection. Consequently the curette defeats its own purpose. It makes a bad matter very much worse.

Now as to the rationale of antiseptic douches. Many sorts have been used from time to time: corrosive in the strength of 1-3000; alcohol, 70%; lysol, etc. Bacteriologists teach us that a solution of one to three thousand corrosive takes many minutes to kill the ordinary pyogenic organism when it is lying in the solution. The same is true of alcohol. When a douche is used, the return flow will make up almost the entire amount that has been used, not more than an ounce or so will remain in the uterus, and when this solution mixes with blood coagulation occurs, searing off the uterine cavity. If this is so, and isn't it true, how many organisms that are doing harm in the uterine mucosa are attacked by this solution sufficiently to destroy them? Douches given for the purpose of washing detritus from the uterine cavity are rational; douches to combat organisms in the uterine mucosa cannot expect to attain the result desired. So frequently, following intrauterine douches, a severe constitutional reaction is seen that it seems hardly wise to resort to these douches unless something definite for the patient's good is to be obtained.

If nature successfully combats the infection and localizes it in the uterine wall, the patient will get well with no other surgical treatment. Fresh air, as in the severe hemolytic invasion, is the most important single detail; plenty of good food, catharsis, alcohol baths, and general hygiene, just as anyone would treat any medical disease, until the formation of pus had taken place, which always requires drainage. These patients, too, are sat up in bed, ice to the fundus and ergot empirically and nothing else.

If the disease remains localized in the uterus and it is not spread by uterine injury, it will run its course from a few days to several weeks, depending upon the virulence of the invading organisms and the patient's resistance. One should watch during the convalescence of such a patient for signs of parametric infection. They show by a rise in temperature after it has been somewhat lower and pain and tenderness by palpation over the affected parametrium. It is fortunately true in puerperal infection of the pelvis that nature surrounds the affected site with layer upon layer of exudate, attempting to localize such infections in the pelvis. The result is, as is not true in appendicitis, that the invasion of the general abdominal cavity is unusual. The treatment of the infection that has gone outside the uterus, showing its localization on one side or the other, is ice over the site, careful watching of the patient, vaginal examination from time to time to watch for the gravitation of pus into the fossa of Douglass. When this occurs, vaginal puncture will relieve the abscess. Going into the abscess from above is almost never indicated and usually is quite hazardous. Infections that go outside the uterus may follow the round ligament to the abdominal wall where localized abscesses may point and when they do surgery is indicated to evacuate them. The lymphatic chain that follows the ureter to the kidney oftentimes is invaded and perinephritic abscesses following puerperal sepsis are not uncommon and indicate drainage as does pus anywhere else in the body. The blood stream becomes infected, general septicemia results, if nature's leucocytic wall has not been sufficient to localize the condition. The patient must be treated for general sepsis and whether she recovers or not depends much upon her resistance. Those cases which live months with sepsis are often of the pyemic variety; each abscess as it develops indicates surgery, but until an abscess is definitely diagnosed surgery is of no avail. These septic cases are medical, as is pneumonia until it develops an empyema, until they develop pus. Surgery in the puerperium means the evacuation of pus; it holds almost no other function.

The staphylococci characteristically are more gradual in their onset than streptococci, the temperature taking several days to reach its height before maintaining its level. It is often of the stepladder character. The pulse ranges from 110 to 120. The uterus in these cases on the third or fourth day is not hard, it is not small, it is tender and the lochia contains pus. Intrauterine treatment, either the douche or the curette, is no more rational here than in the previous type. Nature's walling off process is less destructive and far safer. The empirical treatment—fresh air, elevation of the head of the patient, hygiene, ice, and ergot, will maintain the patient's resistance, favor localization processes in the pelvis, aid drainage, and do, what is most important, no harm.

This condition may last a few days with a subsequent drop to normal of the temperature, providing, of course, that nature has been successful in her attempt to prevent further infection.

On the other hand, infection into the blood stream by continuity into the surrounding tissues, by the lymphatics to the kidney may occur. These extensions are to be treated symptomatically just as the invasion of bacteria in any other part of the body is to be treated until localized pus develops, and this often never will occur, when they are to be treated surgically.

No one thinks nowadays, when a streptococcus throat has resulted in a septicemia, to remove the tonsils. To be sure, the tonsil is the source of the infection, but when the streptococcus is in the blood, treatment directed to the tonsil is of no avail and so with the uterus. If there were any means of dealing intelligently with early uterine sepsis locally before extension could occur, it would be the only rational treatment, but pathology teaches us that nature's defense is far more adequate than any intrauterine manipulation that we know of today.

With colon the distinctive difference is the odor of the lochia; it is distinctly foul because of the characteristic of the organism. The pads in the streptococci and staphylococci organisms of the pyogenic variety show pus and while this pus is strong in odor it is not the foul odor of the colon.

The treatment of this type of infection is in no way different from that of the previous ones. Don't do anything to the patient for the mere sake of doing something. Be guided only in active interference by the definite knowledge that good is being done and never do something because inertly you say it can do no harm.

Pneumococci have the same general characteristics as other pus-forming organisms. The lochia are not foul.

Gonococcal infections are of two large types, one the active case of a new infection due to the presence of gonococci in the vagina at the time of labor; secondly, the lighting up of an old process in one tube or the other which has been lying dormant during pregnancy. The second type is apt to show reaction on the third or fourth day with definite pain and spasm over the affected part. Ice applied there will usually result in no further damage, fever persisting for only a few days.

Of course it is theoretically possible and sometimes it occurs that this old process may become very active, forming pus or developing with some other organism into a septic process in other parts of the body and occasionally even septicemia, but it is again a medical disease until the evacuation of pus has been distinctly indicated. Infection resulting from an active gonorrhea in the vagina at the time of labor is almost always associated with other organisms, colon or staphylococci and occasionally the streptococci, but the treatment in no way differs from what has previously been laid down.

The occasional diphtheria infection is treated as we treat diphtheria invading the throat.

Number three, the putrefactive saprophytes, are almost constant inhabitants of the vagina. They need dead material upon which to live. After delivery, blood clot, placental tissue and membranes are ideal media for their growth. In considering the treatment of such infections, one must ask the question, "Does the saprophyte cause a serious infection? If such is the case, active treatment may be indicated. Anyone who has delivered many women knows the possibility of the retention of membranes. These membranes are left in the uterus, either free or adherent. If they are adherent, it is not an easy matter to remove them; if they are free, won't they come away, and if they do not come away, are they serious? It is only fair to presume that in the average out-patient clinic conducted by medical students who are having their first experience in obstetrics that the retention of part or all of the membranes must be a frequent occurrence. If this is frequent and if the retention of membranes is serious, the only conclusion that one could draw is that the mortality and morbidity in a clinic so conducted would be high. In the Boston Lying-In Hospital neither the morbidity nor the mortality is high and it is less high today than it was in the days when intrauterine interference was the routine treatment. The most that can be said of the retained material is that it offers, besides a medium for saprophytic growth, a medium also for the growth of pathogenic organisms. This undoubtedly is true and we do infer that the vaginas of pregnant women do contain some pathogenic organisms, but is there any better way of getting these organisms into the uterus than by manually taking them there? In Caesarean section the removal of adherent membranes even with the uterus spread open before our eyes, is very difficult and oftentimes almost impossible. How much more difficult, how much more impossible it would be to attempt from below to pull such adherent membranes from the uterine wall and in the process of attempting to pull these off the gloved hand goes through the vagina, which cannot be sterilized, and carries with it bacteria which may have a chance of doing harm inside the uterus. If the membranes are lying loose in the uterus and are got by the entering hand, would they not soon be extracted by normal uterine contractions? Hence does it seem wise to subject a patient to possible harm for a condition which we may not be able to treat, and which nature successfully controls?

Now, saprophytic infections are of two sorts; one sapraemia and the second plain saprophytic infection. Sapraemia is the condition evidenced by constitutional symptoms which are caused by the absorption into the circulation of elements of decomposition. The saprophytic infection is merely the eating away of dead material by saprophytes with its subsequent pus discharge. All sapraemias are saprophytic infections, but many saprophytic infections are not sapraemias. By that I mean that if the material decomposed by the saprophytes drains from the uterus there is no material inside the uterus from which absorption into the general circulation can take place. In other words, drainage is efficient. Now, the difference between saprophytic infection and sapraemia is a question of drainage and not a question of the amount of material that the saprophyte has to live upon. If drainage is inadequate, the patient's temperature may rise as high as 103 and the pulse may range from 100 to 110. The uterus is big; it is soft; it is somewhat tender. The lochia are very foul. Simple massage of the uterus will oftentimes push out a clot or material at the internal os with the result that drainage from then on is perfectly competent. In such cases the temperature will go to normal and remain so. The routine treatment of such cases is elevation, ice and ergot and in the case in which we have very foul pads with no rise in temperature there is nothing to do. Nature is doing all that is necessary.

Logically the sapraemia case is the only one which offers any argument for intrauterine manipulation. Here if one wishes to use a douche for the purpose of mechanically washing out material and does it for that purpose alone, no one can say but that the treatment is logical. but inasmuch as elevation, ice and ergot will accomplish this same result, perhaps taking a day or so longer to do it and subjecting the patient to no possibility of danger, is it worth while to run any chance of carrying true bacteria into the uterus for the treatment of a condition which can be successfully combated by conservative measures? I feel strongly that intrauterine manipulation for sepsis is never indicated; often very harmful and has practically nothing to be said in support of itself.

There is one sequela of the saprophytic infection besides the possible superimposed infection of pyogenic organisms and that is the subinvolution of the uterus with its subsequent prolonged bloody discharge. Cases in which material has been left at the time of labor may often show continued red lochia two or three weeks after delivery, with a uterus which is bigger than normal. This bleeding is due to some foreign substance in the uterus and it will persist until this foreign substance is removed. This complication is not uncommon and it is not common. The treatment in all such cases is rest in bed, ice and ergot, and if the temperature has been normal for a week or ten days and the lochia does not cease under inactive treatment, curettage is indicated and it is in this condition that the curette holds its only rational position in postpartum obstetrics today.

Conclusions. Puerperal infection is bacterial infection. Organisms gain entrance, first by vaginal examination; second, by the presence of an abnormal vaginal flora at the time of labor; third, by extension from foci of infection elsewhere in the body. The three types of puerperal infection depending upon the organism are, first, hemolytic streptococcal infection; second, pyogenic infection; third. saprophytic infection. The treatment of each type depends upon the bacterial reaction and the knowledge of its pathology. By and large, leave it alone. The curette is dangerous. The antiseptic douche unintelligent. The conservative treatment rational and harmless. Surgery plays its part only when the infection has produced localized pus, and then the old-time surgical principle of the evacuation of pus obtains. Vaccines and serums have had their try and they have been found wanting. The future holds its hope first in aseptic preparation of the patient, absolute cleanliness of the operator. In this way, to lower the percentage of infection to its lowest possible point. Next, conservative treatment to do no harm rather than to go on the supposition that some good may come from interference and in the specific serum for each individual case based upon the success of the treatment of type four in pneumonia. Theoretically, vaginal smears and cultures of a pregnant woman taken soon before labor may point out those which contain harmful bacteria and in consequence, some method of making these harmful bacteria harmless may be evolved.

CORRELATION OF DATA IN CASES SEEN AT THE PSYCHOPATHIC DEPARTMENT AND FOXBORO STATE HOSPITAL.*

By Lawson G. Lowrey, A.M., M.D., Boston.

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Data have elsewhere been presented concerning the diagnoses in 419 cases seen at the Psychopathic Department of the Boston State Hospital and transferred to other institutions. At the present time, data are being compiled on about 700 more such cases and the results will shortly be published. This, however, is the first opportunity I have had to make an intensive study of the diagnostic standards and opinions of a single institution as compared with those of the Psychopathic Department. It is important always to submit to the careful scrutiny of one individual the facts and interpretations of the facts applying to any group of cases, since in that way an adequate idea of differences in standards and in interpretations is most easily secured.

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* Presented at the opening of the Laboratory at Foxboro State Hospital, June 2, 1919.

The Psychopathic Department stands in a peculiar position in this respect. Its records are continually being critically scrutinized by the medical staffs of other institutions, but not in a particularly systematized fashion, the result being that all too often errors of omission and commission are not brought to the attention of the staff at the Psychopathic Department, nor are reasons for differences in points of view analyzed. Hence, this opportunity to analyze the changes in diagnosis between these two institutions seems to me of particular importance.

The data are drawn from 231 cases observed at both institutions during the past seven years. These are all the cases which we could ascertain had been observed in both institutions. Of the entire group, 17 cases, or 7 3/10 per cent., received no diagnosis at the Psychopathic, though all except two received a definite diagnosis at Foxboro. Excluding these 17 cases, we find that the diagnoses agree in 165 cases, or 77 per cent., and vary in 48 with one case doubtful. This is precisely the percentage of agreement found in previous study where all institutions were combined. If we include the undiagnosed groups, which is hardly fair to the figures, we find 75 per cent. of agreement.

TABLE I.

PSYCHOPATHIC DIAGNOSIS		FOXBORO DIAGNOSIS		PER CENT.
		Agrees	Disagrees	AGREES
Dementia precox ...	115	102	12	89.5%
Manic depressive ..	29	20	9	68%
General paresis	15	15	0	100%
Neurosyphilis	4	3	1	75%
Acute alcoholic hallucinosis	7	5	2	71%
Psychosis with mental deficiency	4	0	4	0
Mental deficiency ..	5	4	1	80%
Senile dementia ...	4	4	0	100%
Arteriosclerotic psychosis	6	4	2	67%
Involution melancholia	4	2	2	50%
Presenile psychoses.	2	1	1	50%
Psychoneurosis	1	1	0	100%
Psychosis with org. Br. disease	1	1	0	100%
Paranoiac condition .	6	0	6	0
Prolonged delirium tremens	1	0	1	0
Chronic alcoholism..	1	0	1	0
Paraphrenia	3	2	1	67%
Korsakow's psychosis	1	1	0	100%
Alcohol and manic depressive	1	0	1	0
Arteriosclerosis and senile dem.	1	0	1	0
Psychogenic psychosis	1	0	1	0
Psychosis with C.P.I.	1	0	1	0
TOTAL	213	165	48	77%
Alcoholic hall. + G.P.	1	1+	-	77%
Unclassified	17	2	15	
GRAND TOTAL	231	168	63	

In Table I are presented the data concerning agreement and disagreement in diagnosis according to groups. The doubtful case, shown in the table, is one called "alcoholic hallucinosis and general paresis" at the Psychopathic, and "general paresis with chronic alcoholism" at Foxboro.

This woman of 57 had a long alcoholic history, marked auditory hallucinosis (voices threatening her, etc.), a depressed emotional tone and the physical and laboratory signs of paresis. By the time she was transferred to Foxboro, the hallucinosis had cleared up and at the present time the patient is out of the institution on visit.

It is possible that the correct diagnosis is syphilitic paranoid state, a condition first described by Plaut, and recently mentioned by Hoch in a criticism of one of my papers. I have seen three cases which almost certainly belong to this group, and another case of the same type is quoted further on in this paper. It is probable, however, in view of the excessive use of alcohol that in this case we have a non-symptomatic general paresis with an alcoholic psychosis added.

Table II presents all of the data in readily accessible form, showing for each group the total of the diagnoses made at the Psychopathic and how they were changed at Foxboro.

Certain of the apparent errors appear on analysis to represent merely verbal divagations, although in the majority of instances such verbal non-agreement represents an underlying basic difference in etiological conceptions. Thus the changes from manic depressive to involution melancholia (three cases) represent probably a somewhat different standard of viewing the depressions of the involution period. In connection with this I have reviewed Dreyfus' analysis of involution cases, due to which the idea has spread that involution cases should all be classed as instances of manic depressive psycho-

TABLE II.

DIAGNOSES AT PSYCHOPATHIC AND AT FOXBORO.

	Psychopathic Diagnoses		Foxboro Diagnoses																									
		Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	24	25	26	27	28	29	30
1	Dementia praecox	115	102	6	2		1		4																			
2	Manic depressive	29	4	20						1		3										1						
3	General paresis	15			15																							
4	Neurosyphilis	4				3	1																					
5	Acute alcoholic hallucinosis	7					5																1	1				
6	Psychosis c mental deficiency	4		1					3																			
7	Mental deficiency	5						1	4																			
8	Senile dementia	4								1																		
9	Arteriosclerotic psychosis	6	1							1	4																	
10	Involution melancholia	4	1	1								2																
11	Undiagnosed psychosis	17	5	1					2		2		2	1											1			
12	Presenile psychosis	2	1											1														
13	Psychoneurosis	1													1													
14	Psy. c organic brain disease	1														1												
15	Paranoiac condition	6	2							1										1						1		1
16	Delirium tremens	1																	1									
17	Chronic alcoholism	1	1																									
18	Paraphrenia	3																		2							1	
19	Korsakow's	1																			1							
20	Alcohol and manic depressive	1							1																			
21	Senile dementia and arteriosclerosis	1								1																		
22	Psychogenic psychosis	1	1																									
23	Psy. c const. psy. inferior.	1	1																									
14	Infectious psychosis	0																										
25	Epileptic-alcohol equiv.	0																										
26	Toxic lead	0																										
27	Alc. halluc. dem.	0																										
28	Alcoholic paranoid	0																										
29	Alcoholic delusional	0																										
30	Paranoia	0																										
	TOTALS	230	119	32	17	3	7	1	14	8	6	5	2	2	1	1	0	0	1	3	1	1	1	1	1	1	1	1

[1] Alcoholic hallucinosis c G. P. to G. P. c chr. alcoholism.

sis, and I find that this analysis is not convincing. Too many cases died early in the course of the disease or terminated in dementia. It is probably true that the majority of the depressed cases of the involution period are of the manic depressive type, but it is my belief that cases with hallucinations and marked delusion formation should be regarded as cases of manic depressive only when the entire life history of the individual bears out such a conception.

Some of the changes which seem at first to be verbal changes probably represent cases in which different periods in the evolution of the mental state were seen and not sufficient weight was given to the preceding observations. Thus, in the changes in the group of the psychotic feeble-minded, in three cases the Psychopathic diagnosis of "psychosis with feeblemindedness" was changed to read "feebleminded." In two cases the latter diagnosis either expresses the same idea as our psychosis with feebleminded," or else very real instances of psychotic conduct were given no weight in this final diagnosis. In a third case, called by us "feebleminded with chronic alcoholic deterioration," and not regarded as insane, the matter is clearly one of terminology. Of course, if there is or seems to be a deteriorating process in a feebleminded person, then the diagnosis is certainly phrased only with great difficulty. A change of the opposite type, in which we made a diagnosis of feebleminded and raised the question of dementia precox, is regarded at Foxboro as a case of "psychosis with feeblemindedness," which is unquestionably correct and apparently, from their record, the psychosis is dementia precox.

Of course, in the majority of groups the number of cases considered is too small to make any very accurate statistical evaluation. Possibly because of this small number of cases certain changes in diagnosis, which we have elsewhere found to be very common, occur very seldom in this series. So, changes from senile dementia to arteriosclerosis, and *vice versa*, are rare. Of course these changes are most commonly due to variation in the evaluation of indirect evidence. From the study of autopsied cases, it is clear to me that diagnoses in these groups are wrong with surprising frequency.

It appears that there are at least three types of changes in diagnosis. There is: first, an essentially verbal change, representing no real difference in diagnostic standards; second, where the evidence to be evaluated is so indirect that variations in standard and in correctness of interpretation are very common; third, the very important group in which the real evidence of divergent standards exists and calls for close study. Even here, unfortunately, it often occurs that a portion of the deviation is due to carelessness or improper interpretation; *i.e.*, an interpretation which is not justified by the facts at hand.

When such cases are excluded, there still remains an important series of cases for analysis. Of course, all too frequently we solve our puzzling problems on the basis of outcome, but it seems to me we should be very careful in applying this standard to diagnosis, since trusting too much in it will lead to carelessness in case study and in the more important phase of symptomatic diagnosis.

The best method of analyzing the changes and the reasons for them in the group of cases at hand is a rapid survey of the changes in the various groups.

Dementia Precox: In six cases the diagnosis was changed from dementia precox to manic depressive. In three of these cases the record made while at the Psychopathic presents definite signs of schizophrenia, so that the diagnosis would seem to be symptomatically correct, but not verified by longer observation and the outcome. In the fourth case, the Psychopathic record is not complete because of the difficulty of examination of the patient. The fifth was an excited case where the difficulties of differentiation are notorious; and the sixth very interesting case is here briefly quoted:

A man of 29, admitted to the Psychopathic on March 13, 1917. Two brothers had previously been at the Psychopathic; one with a diagnosis of psychoneurosis, the other with a diagnosis of manic depressive. The patient was sent in because he could not work for lack of concentration, noise of great machinery filled his head, his cap hurt his head. He had crying spells. The voices began crying in his head. After he read "Weltschmertz" his heart felt like a rose growing and blooming, then it began to fade and to fall away and the center burned like the sun itself. He talked rapidly, his face was bright, he seemed happy. He had written a drama, a very disconnected thing, called "The Rise and the Fall of Man." On examination he revealed a sex history of masturbation, homo-sexuality and promiscuity. He gave a symbolic interpretation of his rather vivid auditory and visual hallucinations. He had some poorly formed political concepts of very peculiar nature. His emotional tone was unstable, though emotionally depressed. At staff meeting his ideas were quite fantastic. The early hallucinations had disappeared. There was a possibility of previous attacks.

By exclusion we reached the diagnosis of dementia precox. At Foxboro the provisional diagnosis was dementia precox. He was regarded as showing "intellectual, affective and volitional deterioration." The examination revealed much the same as that at the Psychopathic. He became rather markedly depressed and then had a definite period of excitement, although the characteristics of the mania were not clearly those of manic depressive. However, he improved and for a year has been out on visit, working and doing quite well. The confirmed diagnosis of manic depressive is, therefore, based on the seeming recovery. As symptomatic analysis at both institutions pointed to a schizophrenic process, it is necessary to point out that the present condition may be only a remission which we know to be fairly common in precox. One valuable point brought out is that what we may call intellectual, affective and volitional deterioration is not always necessarily so. In not a few cases such deterioration is only apparent and is the result of an active disturbance in one or all of these fields.

In one case the diagnosis was changed from precox to alcoholic hallucinosis, and our record makes no statement regarding the alcoholic history. The nature and content of the hallucinosis, together with the emotional reaction, is much more like alcoholic hallucinosis than precox. It is quite important that we should not depend on the history of alcohol as the only means of differentiating between these two conditions. We may thus make more errors in diagnosis, but we shall also improve our attention to the relationship between symptoms in the various cases.

In the four cases with changes in diagnosis from dementia precox to mental deficiency, it is worthy of note that none are to mental deficiency with psychosis.

Analysis of the Foxboro and Psychopathic records in these cases shows that in one case we are apparently dealing with mental deficiency or dementia simplex, a notoriously difficult differentiation in an adult. One case seems to me dementia precox on a basis of feeblemindedness; another has not been, from the history, feeble-minded, and I believe dementia precox to be the correct diagnosis. The fourth very interesting case is quoted in some detail:

This man of 26 was sent to the Psychopathic Department February 18, 1919, from the municipal court. His father is a spiritualistic doctor. Patient had been in Boston for two weeks. He stole a coat at his place of employment and beneath it wore a lady's coat. At the Psychopathic he was quiet, rather sullen, suspicious, evasive, overbearing in manner, not very accessible. His memory was quite good. He claimed to know all that was going on at home; told of receiving messages from home by spiritual communication. He was always hinting at mysterious powers, but was very evasive about them. His attitude was quite typically schizophrenic. He told conflicting and fantastic stories, including one involving a kidnapping of his brother. At Foxboro, the inability to demonstrate character change, deterioration, delusions or hallucinations was considered to rule out precox, though a happy indifference, egocentricity, boastfulness, fabrication, and absence of memory defect and poor and erratic judgment were advanced as arguments for moronity. These are precisely the points I would urge in favor of precox. Here, then, is a case in which the facts do not particularly differ but in which the interpretation is widely at variance. Eventually, I am sure, the diagnosis will be cleared up and will probably be dementia praecox, or possibly pseudo-logica fantastica.

The interesting changes in diagnosis from dementia precox to general paresis and to juvenile paresis involve two cases worth quoting, the one because it is apparently one of the rare cases of syphilitic paranoid condition; the other because of the difficulty in arriving at any diagnosis.

A man of 50 was brought to the Psychopathic Department March 28, 1915, because he went twice to a church for protection from a large crowd of people who were following him. In the admission office he at once wished to know if he was to be killed. On examination he was oriented, the memory was good. School knowledge apparently retained. There were numerous delusions of at least two years' duration. He was very apprehensive, hallucinated, emotional tone schizophrenic. He had many ideas of reference and was somewhat grandiose.

Physically, there were Argyll-Robertson pupils, exaggerated reflexes, and a typical serology of paresis.

Because of the mental picture, a diagnosis of dementia precox, paranoid, was made and he was sent to Foxboro, where he continued hallucinated and deluded, and with physical and serological signs as given above. At present (1919) he is actively employed each day and does not show the characteristics of general paresis to any marked degree, although his hallucinations and delusions continue. This is, apparently, a typical case of syphilitic paranoid condition.

The other case, a boy of 25, was twice observed at the Psychopathic Department, once at the Rhode Island State Hospital, and once at Foxboro. A definite diagnosis between dementia precox and manic depressive has never been made at any, though we are now fairly certain of dementia precox. The interesting point is that at Foxboro a diagnosis of juvenile paresis was made on the basis of the mental and physical findings; rapid deterioration, following grandiose ideas; poor attention; circumstantiality; partial disorientation; calculation, writing and speech defects; fantastic, expansive delusions; auditory hallucinations; egotistic attitude and very slight physical signs. However, the absence of any serological findings and the failure of progression of physical signs during four years, seems to me sufficient to rule out juvenile paresis, while the more obvious schizophrenia observed this year seems sufficient to establish the diagnosis of precox.

Manic Depressive. The second large group of cases is the manic depressive, and it is interesting to find that, whereas the Foxboro diagnosis agrees with the Psychopathic diagnosis in practically 90 per cent. of cases of dementia precox, the agreement is only 68 per cent. in the case of manic depressive, a rather striking reversal of figures of earlier years and agreeing with the figures found in my recent study.

The most important changes here are the changes to dementia precox, since those to involution melancholia have been sufficiently discussed above. Three of the four cases in which the diagnosis was changed from manic depressive to dementia precox are clearly from the Psychopathic records schizophrenic, and the diagnosis of manic depressive should not have been made. The fourth is a case in which schizophrenic features did not clearly appear during the stay at the Psychopathic, and it is possible that new developments or the outcome have been the deciding factor in the diagnosis. In the other three cases our interpretation was erroneous. The case in which the diagnosis was changed from manic depressive to senile dementia is very interesting, since when seen by us this woman had a good memory, was correctly oriented, was definitely depressed and retarded, but had had no previous attacks, so that this case possibly represents one in which the first signs of the approaching dissolution were to be found in depression.

Cerebrospinal Syphilis. In the one case in which the diagnosis was changed to acute alcoholic hallucinosis, our record (1916) shows an alcoholic history, a poor memory for recent events, auditory hallucinations, delusions of persecution and of reference, apathy and indifference, with depression at times. The neurological examination and the Wassermann reaction in blood and spinal fluid were negative, and the diagnosis of neurosyphilis was based on the following cerebrospinal fluid data: albumin increased, globulin increased, cells 21, gold reading 0 0 1 2 2 1 0 0 0 0. The six days' stay at the Psychopathic did not give time for further study. Although the patient is now well and working, one wonders what the future will show, in view of the spinal fluid signs of an organic nervous disease. Certainly, such findings are extremely rare in the alcoholic group in the absence of syphilis.

Acute Alcoholic Hallucinosis. One case was given the diagnosis "Epilepsy-alcoholic equivalent in a case of alcoholic hallucinosis" at Foxboro. It is evident that we agreed on the alcoholic side of the case, but Foxboro believes there is an underlying epileptic personality as a basis for the alcohol, and so extends the diagnosis further back into the fundamental personality trends underlying psychotic manifestations.

Another case was called toxic psychosis (lead). We had no evidence of any lead encephalopathy. Such cases usually show symptoms of dementia rather than of recoverable paranoid type. Accordingly, I am not quite convinced that the second diagnosis is correct.

Other Psychoses. With respect to the psychoses of the involution period, it is quite clear from even a cursory survey of cases arising then, that a variety of types is encountered. Whether all of these diverse pictures are to be regarded as basically one disorder, is a question which I am not prepared to answer. Theoretically and statistically, there is ample justification for believing that several types of psychoses may arise in this period. Accordingly, all cases should be carefully scrutinized to determine if they are of some other type than the so-called involution melancholia, and this diagnosis should be reserved for cases characterized by the predominance of depression. The more common types of psychosis encountered in this age period are dementia precox, manic depressive, presenile delusional and a group of cases which cannot better be diagnosed than paranoic conditions. Hence, no special quarrel can ever be raised with the diagnoses of the groups with onset in this age period, so long as such diagnoses are based on thorough-going symptom analyses and interpretations.

Another very difficult group, from the standpoint of diagnosis, is the paranoic group. We deal here with a wide range of possibilities, since any group of mental disorder may be characterized by paranoid symptoms. So the term "paranoic condition" should be, as it is, reserved for those cases in which no other diagnosis can be made. Incidentally, such a diagnosis is called a diagnosis only by courtesy, since what we do is to give a clinical description without particular etiologic or pathologic ideas in mind. The term formerly used, "undiagnosed paranoid state," really expresses what we do in the way of diagnosis.

Of the various cases in which a diagnosis of the type of paranoid state was made, after the Psychopathic had failed to make such distinction, one is quite striking. This colored woman of 63 was admitted to the Psychopathic, October 24, 1914, because of a sudden excitement. For ten years she had had facial neuralgia, and now there was marked arteriosclerosis. While in a hospital, waiting for operation, she developed ideas of reference and possible auditory hallucinations. At the Psychopathic the ideas continued. Memory was only slightly impaired. There was a positive Wassermann reaction in the blood serum. At Foxboro, the patient continued hallucinated and deluded, and the diagnosis of senile dementia was made. If senile dementia in this case means the simple deterioration type, then the diagnosis is incorrect. There are three diagnostic possibilities: senile paranoid condition, arteriosclerotic paranoid condition, and a syphilitic paranoid condition, of which the first is probably more nearly correct.

Other changes are scattered and need no particular comment, but one further case deserves special mention: This woman of 35 was at the Psychopathic for over a month, in 1918. She had been for three years very unhappy over an unfortunate love affair, and could not rid herself of thoughts of the man. She lost her ambition and interest, though she had kept on working, and made many demands for sympathy. She then began to complain of an enemy who spread defamatory tales about her. No definite ideas of persecution were obtained, and no hallucinations. A diagnosis of psychogenic psychosis was made. In February, 1919, at another institution, she first showed some excitement and began to elaborate delusions around a physician at the Psychopathic. Hallucinations in many fields appeared; there were many delusions and conduct disorder developed. Transferred to Foxboro, the condition continued there. She was very resistive, impulsive, assaultive, and hallucinated. She became stuporous and died of broncho-pneumonia, and a diagnosis of dementia precox seems quite correct.

Finally, we have a group in which the Psychopathic failed to arrive at a diagnosis. All such cases are of great interest both theoretically and practically, and a very great advance may be expected from a careful study of such cases. The diagnoses made at Foxboro in this group seem to be eminently proper. The two cases which remain undiagnosed do so because of language difficulty.

SUMMARY.

We can then summarize this report by saying that the diagnostic standards at Foxboro and at the Psychopathic are on much the same level. Of 17 unclassified cases, Foxboro has classified all but two. Diagnoses agree in the two institutions in 90 per cent. of cases of precox, 68 per cent. of cases of manic depressive, and in all cases of general paresis. The total agreement of 213 diagnosed cases is 77 per cent. The reasons for variation in diagnostic opinion will usually be found to be either:

1. Verbal changes, representing no real difference.

2. Variations in the evaluation of indirect evidence.

3. Cases in which different phases of a psychotic picture are seen.

4. Difference in standards of diagnosis, of which not the least is the dependence by many people upon outcome as the most important. single diagnostic standard, which I am convinced is a wrong viewpoint.

THE FREQUENCY OF FRACTURES. A RADIOLOGICAL ANALYSIS OF 1.226 CASES.

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The frequency of fractures and types of fractures of certain bones will vary, as is well known, according to the location of the hospital, the season, class of cases, and whether the clinic is in the hospital or dispensary. If the hospital is in a factory town or near a railroad certain types of fractures will predominate. If, on the other hand, the hospital is near a large tenement district where there are many children, fractures of arms and incomplete fractures will predominate. This is also true regarding infection of compound fractures, the results of which differ vastly in different parts of the world.

Fractures in dispensary cases are largely those of children; in adult cases simple fractures or fractures of the phalanges predominate. Hospital fracture cases deal invariably with more serious cases, more with the adult and aged, more with complications. A large part of the cases are the result of street or building accidents. Figures will therefore vary considerably and no report on the rarity of a fracture should be made until the literature has been carefully consulted.

Because of these facts, the following tables giving an analysis of 1,226 fracture cases were considered of sufficient interest and value to publish. They do not include dispensary cases. No one class of patients predominates. There is no particular emphasis to be laid on any single cause or condition.

Three tables are presented. The first gives an analysis of 1,226 fracture cases, with both individual bone and group percentages. The second table presents an analysis of 937 fracture cases. This is of the long bones only and gives the types of fractures and position. The third table gives an analysis of 103 dislocations. This gives the frequency of dislocations as compared with fractures.

The well-known statistics of Plagemann (Rostick clinic) Table No. III, based upon 1,393 cases confirmed by roentgenograms, has been studied and for comparison it is given here, although not in its complete form. Sheldon's statistics from the Massachusetts General Hospital are given here for comparison with Table No. II. Sheldon's series covers 57 cases of fracture of femur and 405 cases of fracture of tibia and fibula. Eisendrath quotes figures from the Boston City Hospital from a series of 38,627 fracture cases covering the period between 1864 and 1905. A modified form of this table is also presented here. This series, however, is not based on roentgenographic diagnosis, and consequently forms no true comparison with the present series. It also does not include any but simple fractures.

Table I.

Table Giving Analysis of 1226 Fracture Cases.

Skull: Total number fractures, 86; percent, 7.01.		
15	parietal	17.44
6	temporal	6.97
16	frontal	18.60
15	occipital	17.44
3	malar	3.48
15	inf. maxillary	17.44
8	sup. maxillary	9.30
8	nasal	9.30
4	orbital	4.65
4	zygomatic	4.65
Vertebrae: Total number fractures, 26; per cent., 2.11.		
9	cervical	34.61
1	dorsal	3.84
16	lumbar	61.53
Humerus: Total number fractures, 60; per cent., 4.89.		
9	upper shaft	15.00
10	middle shaft	16.66
12	lower shaft	20.00
29	ends of shaft	48.33
Radius: Total number fractures, 108; per cent., 8.80.		
12	upper shaft	11.11
12	middle shaft	11.11
62	lower shaft	57.40
22	ends of shaft	20.37
Clavicle: Total number fractures, 40; per cent., 3.26.		
Scapula: Total number fractures, 16; per cent., 1.38.		
Ulna: Total number fractures, 86; per cent., 7.01.		
10	upper shaft	11.63
12	middle shaft	13.95
27	lower shaft	31.39
37	ends of shaft	43.02
Carpals: Total number fractures, 12; percent, 0.97.		
5	scaphoid	41.66
1	pisiform	8.33
2	trapezium	10.66
1	trapezoid	8.33
2	os magnum	16.66
1	cuneiform	8.33
Metacarpals: Total number fractures, 65; per cent., 5.30.		
5	first	7.69
16	second	24.61
17	third	26.15
14	fourth	21.53
13	fifth	20.00
Phalanges: Total number fractures, 44; per cent., 3.59.		
Ribs: Total number fractures, 53; per cent., 4.32.		
12	sternal	22.64
19	middle	35.84
22	vertebral	41.50

Pelvis: Total number fractures, 36; per cent., 2.93.

5	ilium	13.88
12	ischium	33.33
15	pubis	41.66
2	sacrum	5.55
1	coccyx	2.77
1	acetabulum	2.77

Femur: Total number fractures, 128; per cent., 10.44.

24	upper shaft	18.75
45	middle shaft	35.15
20	lower shaft	15.62
39	ends of shafts	30.46

Fibula: Total number fractures, 166; per cent., 13.53.

27	upper shaft	16.26
33	middle shaft	19.87
88	lower shaft	53.01
18	ends of shaft	10.84

Tibia: Total number fractures, 183; per cent., 14.92.

19	upper shaft	10.38
33	middle shaft	18.03
68	lower shafts	37.15
63	ends of shafts	34.42

Tarsals: Total number fractures, 39; per cent., 3.18.

13	astragalus	33.33
16	os calcis	41.02
4	scaphoid	10.25
3	cuboid	7.69
3	1st cuneiform	2.69
1	2nd cuneiform	——
—	3rd cunieform	——

Metatarsals: Total number fractures, 39; per cent., 3.18

8	first	20.51
5	second	12.82
6	third	15.38
8	fourth	20.51
12	fifth	30.76

Phalanges: Total number fractures, 28; per cent., 2.28.

Patella: Total number fractures, 11; per cent., 0.89.

TABLE II.

TYPE OF FRACTURE OF LONG BONES.

An Analysis of 937 Cases.

		Simple				Comminuted				Impacted			
		Tr	L	Ob	D	Tr	L	Ob	D	Tr	L	Ob	D
Clavicle 40	Proximal	4		1									
	Middle	8		3		2		2				1	
	Distal	8		4		3		4					
Humerus 60	Proximal	3	1	2		1				2			
	Middle	5		2	1	2							
	Lower	6		2	2	1		1					
	Ends	17		4	2	2		1		2	1		
Radius 108	Proximal	5	1			2			1	1		1	1
	Middle	9		1	1							1	
	Lower	26		7	2	5	1			19		2	
	Ends	14		3		2				2		1	
Ulna 86	Proximal	4	1	1		3		1					
	Middle	7		2	1	2							
	Lower	19		3		2	1			2			
	Ends	29	4			3	1						
Metacarpal* 65		2	2	1									
		6		7		3							
		5		7	2	3							
		7		3		2		1		1			
		7		1		3		1		1			
Femur 128†	Upper	6		12		3		2		1			
	Middle	22	1	13		1	1	7					
	Lower	6		7		2		4	1				
	Ends	23	3	3		4	1				5		
Fibula 166	Upper	12	1	8		4		2					
	Middle	12	1	4	2	10		3	1				
	Lower	24	1	41	3	5	1	10		1		2	
	Ends	9	3	5		1							
Tibia 183	Upper	1	1	6	3	5	2			1			
	Middle	10	1	8	3	6		4	1				
	Lower	21	2	23	4	7	1	6	4				
	Ends	24	10	16	3	4		2	2	1		1	
Metatarsal* 39		5	1					1	1				
		3		1				1					
		2		2		1		1					
		3		1	1	1		2					
		7	1	3		1							

* First, second, third, fourth, fifth respectively.

† Femur: Intertrochanteric, 119; neck, 22; head, 2.

TABLE III.

DISLOCATIONS.

An Analysis of 103 Cases.

Ankle	8
Knee	5
Hip	7
Wrist	10
Elbow	7
Shoulder	28
Carpal	8
Metacarpal	1
Tarsal	10
Metatarsal	2
Pelvis	7
Rib	3
Toe	3
Vertebrae	4

TABLE III. (Plagemann.)

	Number of Cases and Percentages
Fracture of skull	59 — 4.23
Fracture of the vertebrae	23 — 1.65
Fracture of the pelvis	17 — 1.22
Fracture of the ribs	40 — 2.87
Fracture of the sternum	5 — 0.359
Fracture of the scapula	13 — 0.93
Fracture of the clavicle	54 — 3.87
Upper extremity	571 — 40.99
Radius and ulna	238 — 17.09
Radius	73 — 5.24
Ulna	31 — 2.22
Bones of hand	139 — 9.98
a Carpals	29 — 2.08
b Metacarpals	35 — 2.61
c Phalanges	75 — 5.405
Lower extremity	585 — 41.99
Patella	35 — 2.51
Bones of leg	286 — 20.53
Tibia	61 — 4.38
Fibula	57 — 4.09
Bones of foot	114 — 8.18

MASSACHUSETTS GENERAL HOSPITAL STATISTICS.

A Study of the X-Rays of Cases of Fracture of the Long Bones, etc. Russell F. Sheldon, 1917, Vol. clxxvi, No. 2, p. 61

Fifty-seven Fractures of Femur.

Head		1
Neck, impacted	5	
not impacted	5	10
Intertrochanteric		4
		15
Shaft		
Upper one-third	4	
Middle one-third	31	
Lower one-third	7	42
		57

Four Hundred and Five Fractures of Tibia and Fibula.

Upper end			
Tibia	8		
Fibula	1		
		9	
Shaft			
Both bones	94		or 23%
Tibia	32		or 7.9%
Tibia, tuber.	2		
Fibula	1		
		129	
Malleoli or lower end			
Both bones	114		or 28%
Tibia	44		or 10.8%
Fibula	108		or 26.6%
		266	or 65.4%
Multiple	1	1	
TOTAL		405	

BOSTON CITY HOSPITAL STATISTICS.
(Not X-ray Statistics.)

From 1864 to 1905—38,627 Fractures. Keen's Surgery, Vol. ii, p. 75, Fractures, Daniel N. Eisendrath.

Simple Fractures.

	PER CENT.
Radius	13.45
Humerus	10.16
Ribs	9.23
Femur	8.37
Clavicle	7.96
Fibula	6.77
Metacarpus	3.71
Tibia	3.63
Skull	2.86
Tarsals	2.73
Phalanges (upper extrem.)	2.30
Inf. maxilla	1.99
Patella	1.90
Ulna	1.82
Facial bones	1.55
Carpus	1.43
Vertebrae	0.95
Scapula	0.73
Pelvis	0.60
Metatarsus	0.48
Phalanges (lower extrem.)	0.22
Sup. maxilla	0.20
Sternum	0.11
Coccyx	0.05
Hyoid	0.002
Both bones of leg	11.20
Both bones of arm	5.10

Occasionally reports appear of fractures of a single bone or of a rare type of fracture which justifies the publication of a case. In the Radiological Department of the New Haven Hospital and Yale Medical School all fractures have been indexed since 1916 and the present tables are based on them. In comparing these four series (three of which were all that were easily accessible in the literature), a great disparity will be found, but this fact bears out the assertions made in the earlier part of this paper. It also, in a measure, justifies reporting these statistics.

BIBLIOGRAPHY.

Plagemann: Roberts and Kelly, 1916. Page 4. Treatise on Fractures
Sheldon, Russell F.: "A Study of the X-Rays of Cases of Fracture of the Long Bones, etc." BOSTON MEDICAL AND SURGICAL JOURNAL, 1917, Vol. clxxvi, No. 2, p. 61.
Eisendrath, Daniel N.: Keen's Surgery, Vol. ii, p. 75. Fractures.

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MULTIPLE SEROSITIS.

BY WILLIAM D. REID, M.D., BOSTON.

I HAVE analyzed the cases of chronic multiple serositis that came to autopsy at the Massachusetts General Hospital. My object in this study is to learn more of the disease, especially as regards diagnosis. The cases are not listed as "multiple serositis" in the autopsy records, but I have selected all cases in which the anatomical diagnosis contains the group of "chronic pleuritis, adhesive pericarditis, perihepatitis, and perisplenitis." One or more of the above pathological findings are present in a larger number of cases, but I have limited the study to those in which the complete group is present. There are 15 such in the 3900 autopsies, making the incidence of this disease just under .4%. It is probable that this figure is unduly low as the selection of only those cases in which there were definite fibrous adhesions in all these four serous membranes may have excluded some cases coming to section in the stage of acute inflammation. Also it should be realized that many more cases appear in the clinical records of the hospital, but these did not terminate fatally while in our wards, or else postmortem examination was not obtained.

In the course of teaching I have found that some of the students did not include multiple serositis in the differential diagnosis of ascites, and in fact had not as yet learned of the disease. This was the less disappointing to me when I discovered that some medical textbooks do not describe the condition. Multiple serositis appears in the literature under many titles; thus, Howard Fussell, in his sixth edition of Tyson's Practice of Medicine, lists the following synonyms: Multiple hyaloserositis zuckergussleber (iced liver), hyperplastic perihepatitis, pericarditic pseudocirrhosis of the liver, indurative mediastinopericarditis, and polyorrhomenitis. Pick's disease is yet another term.

Study of these fifteen cases discloses that the condition was fully appreciated only at the autopsy. In two cases, however, the clinicians discovered the adhesive pericarditis and in a third the diagnosis was "chronic fibrous peritonitis." This latter case, however, had been subjected to abdominal section for possible relief of the recurring ascites. Another case, aged 57 years, with a symptom of dull, cramplike pain in the epigastrium, was explored surgically and the presence of dense adhesions and sensation of a mass (which proved to be chronic inflammatory) at the head of the pancreas lead to a mistaken diagnosis of carcinoma of the head of the pancreas.

There were nine males and six females. The age varied from four to seventy years. In this small group no particular age period shows a preponderance; eight cases were under forty and seven above it.

As regards the history of previous infections, the frequency of occurrence of the diseases listed is as follows: Measles, 8; mumps, 6; whooping cough, 4; scarlet fever, 4; tonsillitis, 3; gonorrhea, 3; acute articular rheumatism, 2; diphtheria, 2; malaria, 1; chickenpox, 1; pleurisy 1, and "usual children's diseases," 1. In three instances previous illness was denied.

Symptoms were present thus: Dyspnea, 7 (one with orthopnea); weakness, 4; "never strong," 1; precordial pain, 3; palpitation, 3; anginal attacks, 1; edema of the feet, 1; pain in joints, 1; fever, 1; dull ache in epigastrium, 1; purpura, 1; swollen abdomen, 5.

The pericardial cavity was obliterated in seven cases and in the remaining eight the two layers were united by numerous fibrous bands. Various murmurs and thrills were present in ten of the cases, but usually did not differ in character from murmurs occurring with the endocardial lesions which were also present in these same cases. I note the presence of apical presystolic murmurs and thrills in four instances in which the autopsy disclosed some mitral endocarditis in all, but with true stenosis of the valve in but one case. In one instance a systolic murmur at the apex and transmitted to the axilla and the base of the heart was explainable by the autopsy finding of "chronic interstitial myocarditis" causing a relative mitral insufficiency. Pericardial friction rubs were detected in two cases. In but three of the fifteen cases was the heart examination completely normal.

In no instance was Broadbent's sign present. In one instance a paradoxical pulse was noted, but as the heart findings were normal save for some enlargement and a general poor quality of the sounds, this clue did not lead to a diagnosis of the adhesive pericarditis. The clinical diagnosis was "chronic fibrous peritonitis" which was correct as far as it went.

It is of interest to note the data about cardiac enlargement. In the nine cases in which the pathologist found the heart hypertrophied an endocardial lesion was present as a complication. In six instances no hypertrophy was recorded.

As regards the abdomen, I find that physical examination was normal in nine cases. Of the remaining six, five had definite ascites which was evident clinically and one showed slight ascites at the autopsy. In these six with ascites the perihepatitis and perisplenitis were well-marked, but in four cases the heart showed endocardial or myocardial lesions sufficient to be a factor in the production of the abdominal effusion. Examination of the ascitic fluid in the various cases gave the findings of a typical transudate, *i.e.*, clear, specific gravity about 1008, low cell count, etc.

One of this series of patients had a history of abdominal paracentesis performed one to four times a year over a period of about five years. This very fact should suggest the diagnosis of multiple serositis. In the case referred to I find that the pericardial sac was described as obliterated and the capsules of the liver and spleen were found to be fibrous and thickened to 5 mm., making a good example of the zuckergussleber or "iced liver", *i.e.*, like the icing on a cake.

The pleural cavities showed fibrous adhesions almost to the point of obliteration. In five cases there was also some hydrothorax on both sides and in a sixth it was present on the right side.

A study of the cases from the pathological side shows that in seven instances the chronic multiple serositis (pericarditis, pleuritis, perihepatitis, and perisplenitis was the primary finding and in the remaining eight it was listed as a secondary lesion. Thus it occurred with congenital stenosis of the pulmonary valve, gastric carcinoma, endocarditis of all four valves, myocarditis with aneurysm of the left ventricular wall, endocarditis and arteriosclerosis, arteriosclerosis and myocarditis, lobar pneumonia and arteriosclerosis, and fracture of the femur and chronic endocarditis, respectively.

Blood pressure was not elevated in any case. Fever varying from 99° to 102° was present in four cases.

The group of fifteen cases under discussion in this paper may be said to be characterized by pathological evidence of a previous inflammation of the pleura, pericardium, and peritoneum. And in the two with the pericardial rubs there was also some fresh lesions. In studying the detailed autopsy records of these and of other cases (I have recently examined the notes of all the hospital autopsies in which adherent pericaditis was found) one feels that he is reading of scars of several conditions which have much in common if they be not part of the same process. Thus, the adhesions may be limited to any one of the four cavities, may involve any group of these, and may or may not show attachment to the adjacent structures. In the latter instance the pathologist uses the terms mediastinopericarditis, pleuro pericarditis, etc.

In an exhaustive article on multiple serositis Kelly,[1] * of Philadelphia, offers as probable cause the occurrence of infection by an organism of relatively low virulence. The patient survives and fibrous adhesions are formed at the site of the inflammatory process. No one organism is accused. In fact, little data is available on the bacteriology of the condition as the organisms commonly die off before the stage of fibrous adhesions is reached. This view of the etiology appears sound to me.

The same author quotes from a paper by Clark[2] to show why the process centers about the central tendon of the diaphragm and extends to the structures above. "Fluids and solids may pass through the endothelial layer of the peritoneum, the fluid in many places, the solid particles only through the central tendon of the diaphragm. Minute particles are carried in an incredibly short time from the peritoneal cavity through the diaphragm into the mediastinal lymph vessels and glands, and thence into the blood circulation, by which they are distributed to the abdominal organs, to appear in the collecting lymph glands of these organs. The leucocytes are largely the bearers of foreign bodies from the peritoneal cavity through the diaphragm into the mediastinal lymph vessels and thence into the blood circulation. There is normally a force in the peritoneal cavity which carries the fluids and foreign particles toward the diaphragm, regardless of the posture of the patient, though gravity can greatly favor or retard the current." The experimental work of B. H. Buxton and J. C. Torrey[3] confirms this picture of the physiology of absorption from the peritoneal cavity.

It is probable that at times the process may start in one of the serous membranes above the diaphragm and work downward. That extension may occur by continuity, however, is held to be uncommon by W. H. Robey in a recent study of acute pericarditis.[4] Perhaps the truth of Dr. Robey's opinion is one reason that acute pericarditis is so much more common than involvement of the group of serous membranes. Cases with the adhesions extending to adjacent structures as from the pericardium to the mediastinum and to the anterior thoracic wall are obviously extensions by continuity.

Conclusions. This study leads me to the following conclusions:

Chronic multiple serositis presents considerable diagnostic difficulties. This is particularly true in the coexistence of other diseases.

Both history and symptoms may fail to suggest this condition.

Presystolic murmurs and thrills may be heard over the cardiac apex in the absence of stenotic change of the mitral valve as disclosed at autopsy.

Broadbent's sign and paradoxical pulse may both be absent.

Ascites may or may not be present. A history of the recurrence of abdominal effusion over a long period, perhaps of years, should suggest chronic multiple serositis.

The condition is probably due to the occurrence of an infection of a virulence sufficiently low to permit the survival of the patient and the healing of the inflammatory lesions by fibrous adhesions.

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* One interested in further details on multiple serositis should read Kelly's article.

The physiology of absorption from the peritoneal cavity as described by Clark, Buxton, and others, offers further light on the development of chronic multiple serositis.

REFERENCES.

[1] Kelly, A. C. J.: Amer. Jour. Med. Sc., 1903, Vol. cxxv, p. 116.
[2] Clark: Jour. A. M. A., 1901, Vol. xxxvii, p. 360.
[3] Buxton, B. H., and Torrey, J. C.: Jour. Med. Research, 1906, Vol. xv, p. 3; Buxton, B. H.: Jour. Med. Research, 1907, Vol. xvi, p. 17. Jour. A. M. A., 1907, Vol. xlviii, p. 1528.
[4] Robey, W. H.: Am. Jour. Med. Sc., 1917.

Book Reviews.

Aids to Rational Therapeutics. By Ralph Winnington Leftwich, M.D., C.M., M.R.C.S. New York: William Wood & Co. 1918.

In presenting the subject of therapeutic treatment, the most practical and scientific method is to group diseases of allied pathology and those which require similar treatment. It is this unique arrangement which makes *Aids to Rational Therapeutics* unusually valuable. In this book, diseases are divided into forty groups on this basis, and those which cannot be so classified are considered in a separate section. By this method the student is able to learn at one time the treatment applicable to a number of diseases, and can master separately the modifications in treatment necessary in some instances. This method not only saves time and labor, but also presents a broader outlook than can be acquired by studying each disease separately. The sections dealing with Automatic Habit, the Hyperaemic Group, and Insanity are of interest from the standpoint of general therapeutics. The volume includes a table of pharmacopoeial equivalents for the benefit of American readers.

Compendium of Histopathological Technic. By Emma H. Adler. New York: Paul B. Hoeber. 1918.

It is helpful to students untrained in laboratory work to be able to refer to an account of methods which others have found most satisfactory. In this volume, *Compendium of Histopathological Technic*, the experiments made in the pathological laboratory of the Presbyterian Hospital have been made available. Various procedures are described with a simplicity, yet with sufficient detail, to make the subject comprehensible to the beginner and to prepare him for more exhaustive treatises on this subject. General directions are given for the fixation of tissues, either in Zenker's fluid or in 10 per cent. formalin. The former is best adapted to frozen sections, the preservation of fat and myelin, and certain clinical reactions; the latter, to histological and pathological investigation. Various methods of preparing paraffin, frozen, and celloidin sections are explained. The Jores-Klotz method of preserving museum specimens is considered in the appendix.

The Nature and Science of Things. By Hugh Woods, M.D., B.A., F.R.C.S. New York: William Wood & Co. 1918.

The Nature and Science of Things has to do with a discussion in eleven chapters of space: matter, motion, time; states of matter: chemical atoms and molecules and chemical combination; modes of motion; heat; light; electricity and magnetism; sound and other physical phenomena; astronomy and gravitation; life and vital processes; the senses and the mind, and the relation of these subjects to every-day life. The main ideas are based upon one of the poems of Lucretius, pupil of Epicurus, written two thousand years ago and bearing the same title as this volume. It is an effort on the part of the author, who uses excerpts from the poem in the beginning of each chapter, to show that energy, as such, can be derived only from preexistent energy transferred from matter to matter; and an attempt is made to enlighten the general reader as to the unlimited energy in the universe and the uses to which a great deal of latent energy may be applied. It is not, however, a remarkable explanation.

The Human Machine and Industrial Efficiency. By Frederic S. Lee, Ph.D., LL.D. New York and London: Longmans, Green and Company. 1918.

The conception of the human element in industry as a physiological process is both practical and scientific, and essential to the attainment of highest industrial efficiency. At the present time, the course followed by the industrial managers is still empirical and traditional, based on past experience rather than on scientific principles. The volume, *The Human Machine and Industrial Efficiency*, presents various aspects of human activity, such as the qualifications of workers, the relation of output and fatigue, the importance of rest periods from the point of view of economy, the problem of labor turnover, and the industrial efficiency of women compared with that of men. The value of industrial medicine and welfare work is recognized as indispensable to the advancement of health and productivity. This book presents many facts relating to war industries, but the principles underlying them are applicable and vital to all industries.

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THE ACTIVITIES OF THE MASSACHUSETTS GENERAL HOSPITAL.

THE one hundred and sixth annual report of the trustees of the Massachusetts General Hospital includes in Section A an account of the activities during the year 1919 of the General Hospital in Boston, the McLean Hospital and the Convalescent Hospital in Waverley, and in Section B, a report of the medical and surgical affairs of the General Hospital and a report of the General Executive Committee. The report shows that considerable progress has been made in the various departments of the hospital. During the year most of the members of the staff and officers of the hospital who have been absent upon duties connected with the World War have returned to resume their activities at the hospital. In 1919 there were admitted for treatment in the wards, 6,074 patients; in the emergency ward, 5,459; in the Out-Patient Department, 27,948; in Phillips House, 364 medical, 1,205 surgical, and 139 obstetrical patients. In the Social Service Department of the hospital the most significant event of the year was the act of the Trustees assuming its financial and administrative control. The total expenses for the administration of the General Hospital amounted to $557,077.99 in 1919; of the Out-Patient Department, $109,583.58, and of Phillips House, $259,396.52. Tables of medical and surgical statistics are presented in terms of the International Classification and also according to the Sections of the Classification of Diseases in use at the Hospital. In an appendix are given brief abstracts of operated cases resulting in death.

At the McLean Hospital, in spite of the difficulty in obtaining nurses, the care of the patients has been maintained at its usual high standard. An agreement made with the Army School of Nursing, Medical Department, United States Army, whereby beginning in January, 1920, ten nurses will be sent to the hospital every three months during a period of about two years for training in mental and nervous diseases, temporarily alleviates the difficulty of securing adequate nursing service. Although the usefulness of the institution has not been curtailed so far as the treatment of patients is concerned, the rigid economy which has been necessary has hindered the research work which should be made possible. The total number of patients under treatment at the McLean Hospital in 1919 was 354. The hospital has served the public to the limit of its capacity and it has been necessary to decline many applications because of lack of room. Additional cottages for single patients are greatly needed. The McLean Hospital is the institution to which the average citizen turns for help, and it answers a special need, standing as it does between the small private institutions where the rates are high and the state hospitals. The psychological department now carries on experimental work with all admissions capable of the necessary cooperation. Routine use is made of the Stanford Binet Scale and of the free association experiment. Other research work includes study in the pathology of the simple reaction process, in conditioned reactions, special personality studies, graphic records of station, and a problem in the threshold of consciousness. The report states that the most suitable means of extending the scientific services of the hospital are (1) to organize a department especially for physiological chemistry to work in coördination with the psychological service, and (2) to provide a certain amount of assistance (partly clerical and partly technical) which will make most promptly available to the institution the results of its rapidly accumulating material. An endowment fund of two hundred thousand dollars is needed for the maintenance of the scientific laboratories and workers of the hospital.

The report of the General Executive Committee of the Massachusetts General Hospital indicates that new lines of progress have been undertaken by various departments. The year has witnessed the further development of a new policy,—that of seeking patients instead of being content with treating those who come to the hospital of their own accord. This tendency has increased for the most part unconsciously and without any deliberate intention on the part of the hospital. Up to 1905 the hospital accepted suitable patients who sought its aid, but never sought them; in that year the first aggressive attack was made on the tuberculosis problem. In 1916, after the infantile paralysis epidemic, this policy developed to a considerable degree, and through the Social Service Department children were sought out who had passed the acute stages of the disease but needed exercise, massage, splinting, and apparatus or operation for the prevention of crippling, lameness, and deformity. This principle of prevention has been exemplified in tuberculosis classes, in the poliomyelitis clinic, in the syphilis clinic, and to some extent in the children's clinic. Whether or not this policy should be confirmed and extended is a matter for study and consideration.

A second policy, originated at the Massachusetts General Hospital,—that of separating special diseases from the general clinics,—has been extended, with obvious benefit to patients. First, tuberculosis; then syphilis, gonorrhea, diabetes, stomach troubles, poliomyelitis, children's nutrition, speech defects, asthma, and heart disease now are being treated separately. In many instances class methods have been found most effective, for by this means not only is the time of the physician saved, but patients often instruct and encourage each other by testifying convincingly of their own improvement. Within such clinics as the children's, the nerve, the orthopedic, and the genito-urinary, the same principle of assembling like groups of patients is being carried out. The danger of this method to physicians lies in the fact that it tends to narrow their interests to their own specialties. This can be avoided, however, by a system of rotation in the special clinics so that each physician may serve an apprenticeship in a special clinic, later taking charge of it for a time, and then teach an understudy and himself become in turn an understudy in a second special clinic. Such a method would give physicians training unequalled in this vicinity.

The year 1919 marks also the real beginning of organized clinical research at the Massachusetts General Hospital, under the directorship of Dr. David Edsall. This work was planned in 1917, but was delayed for two years because of the war. By means of the efforts of this group of men closely connected with each other and devoting their full time to research, encouraged and supervised by a director, research has become organized rather than sporadic. Studies begun on patients in wards have been completed by careful follow-up work and observation after discharge. In the Medical Laboratory studies are being made of a number of special problems, including diabetes mellitus, nephritis, and blood fat and blood sugar in a variety of conditions, the hydrogen ion concentration of pneumonic exudates, the basal metabolism in thyroid disease, and the respiratory exchange in infants.

Among the special studies which are being made by members of the Surgical Division are a careful analysis of the results of the treatment of surgical affections of the stomach and duodenum, an analysis of the results of the treatment of peripheral nerve lesions, an analysis of the treatment of exophthalmic goitre, and the treatment of bone fractures. In order to establish the Carrel-Dakin technique in the Hospital, it was requested of the Rockefeller War Hospital that there be admitted to its wards for study and instruction a member of the staff, a resident surgeon, a nurse, and a chemist. These four individuals, after learning the essentials of the treatment, have established it at the Massachusetts General Hospital, where it has been administered satisfactorily for two years. Clinical as well as laboratory researches have been established, and among the most important subjects assigned for special research may be mentioned surgery of the brain and spinal cord, cancer of the rectum, of the uterus, of the face, mouth, and tongue, surgery of the chest, empyema, and the treatment of septic hands.

A series of clinical meetings for their own members, with papers and demonstrations, have been begun by the Medical Out-Patient Staff, and arrangements have been made so that the Out-Patient men may see with the house staff their most interesting cases, and consultations may be held by the attending staff with members of the House Staff.

The Industrial Clinic has been reopened for the past year, the expenses of conducting it now being met by the Medical School from the funds for Industrial Medicine. The Poliomyelitis Clinic has continued treatment of children who were afflicted with the epidemic of 1916. A new clinic has been formed for the treatment of anaphylactic cases. The Nerve Department has attempted to keep itself united as closely as possible with the rest of medicine and to enlarge its activities by providing for interchange of information with the basic sciences of physiology and pathology. The Department of Syphilis has treated during the year 1,782 more patients than in 1918. The Pathological Laboratory has carried on its usual routine, bacteriological, chemical, microscopical, and pathological examinations in connection with the study of diseases of patients. The Roentgenological Department received 9,256 cases in 1919.

This annual report of the Massachusetts General Hospital has revealed a number of interesting and comparatively new phases of hospital administration which will be significant in determining the future policies of that institution.

WATERING PLACES AND CLIMATIC RESORTS OF THE CZECHOSLOVAK REPUBLIC.

It is not generally known that there are included in the Czechoslovak Republic over one hundred and seventy mineral and curative springs equal in therapeutic value to any in the world. Hitherto, only such towns have been known as Karlovy Vary and Marianske Lazne, in which particular interest has been taken by the Austrian governments because of their large German majority. Some of the springs in Czechoslovakia are unique, such as the ferrugineous cold carbonic acid water springs at Frantiskovy Lazne (Franzensbad), the ferrugineous hyperthermal waters at Vyhne and Sliac, the sulphur hyperthermal waters in Pistany of which the temperature exceeds sixty Celsius, bicarbonate waters, and the chlorinated soda cold carbonic acid water springs at Luhacovice. In the Tatra Mountains, reaching to a height of twenty-six hundred meters, there can be found comfortable resorts such as Tatranska Lomnica, Strbske Pleso, and others, situated in the midst of magnificent natural scenery. A number of the most important watering places have been described in a pamphlet published by the Ministry of Foreign Affairs and edited by Dr. A. Pohorecky, at Frantiskovy Lazne.

The waters of Frantiskovy Lazne are valued chiefly for their rich contents of ferrugineous mineral mud. The mud and carbonic acid baths, poultices, gargarisms, inhalations and permanent irrigations available at this resort have been found effective in the treatment particularly of the diseases of women and of heart diseases. A second watering place is at Sv. Jachymov, situated seven hundred and twenty-two meters above the sea, with subalpine climate and fresh mountain air. A strongly radioactive spring comes forth from a mine of about three hundred meters in depth. Skin diseases, psoriasis, pruritus, eczema, rhinoscleroma, malign tumors, chronic rheumatism of articulations and muscles, neuralgia, lymphadenitis, and torpid exudations are treated here with baths, poultices, and radium rays. Karlovy Vary, situated three hundred and seventy meters above the sea in a picturesque valley surrounded by forest covered hills five hundred meters high, is noted for its sulphate, chlorinated, bicarbonated soda hyperthermal water springs, with a temperature of 32.7-70.1 C°, and offers treatment for chronic catarrh of the stomach, intestines, and bladder and for catarrhal jaundice, chronic hyperaemia of the liver, gall stones, gout, diabetes, and obesity. In the heart of a beautiful valley in Bohemia, six hundred and forty meters above the sea, lies Marianske Lazne, with its sulphate, chlorinated, bicarbonated, cold carbonic acid water springs. The baths, drinking fountains, and river baths of Podebrady, situated in the plain of Labe (Elbe) rich in meadows and forests of pine and leaf trees, are found beneficial by many sufferers from disease of the heart and arteries, diabetes, and chronic diseases of the skin. In Moravia there is Luhacovice, situated in a valley close to the Carpathian Mountains and visited annually by approximately fourteen thousand persons.

In Slovakia the watering places and climatic resorts are situated on the south slopes of the high Tatra Mountains, which form a beautiful mountain chain separating Poland from the Czechoslovak Republic. Among the most renowned of the resorts in Slovakia are Lubochna, situated on the river Vale, Piestany, with its rich sulphur, hyperthermal water springs 60-70° C and extremely radioactive; Sliac, on the river Hron; Sthrbske Pleso on a lake at the height of thirteen hundred and fifty meters; Tatranska Lomnica, a sunny resort over eight hundred meters above the sea, and Trencanske Teplice, situated in a deep wind-protected valley among the Carpathian Mountains. At Prague, in a large park on the south slope of Vysehrad, there are four large buildings devoted to the treatment of internal diseases, to surgery, and to physiotherapy. The sanatorium is equipped with seven operating halls, chemical and microscopic laboratories, roentgen rays, a hydropathic department with mud, carbonic acid baths and hot air treatment, massage, inhalation chambers, electro-pneumatic treatment, phototherapy, and a gymnasium furnished with most modern apparatus. The opportunities afforded by the waters and springs in the Czechoslovak Republic should be more widely known in this and in other countries.

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MEDICAL NOTES.

Medical Education in Peking.—The opportunities for medical education in Peking have been greatly increased during the last fifteen years. In 1906, the Peking Union Medical College was founded, and was maintained until 1915 by missionary associations of America and Great Britain. During the past five years, when it has been controlled by the China Medical Board of the Rockefeller Foundation, there has been a great improvement in the teaching organization and in the accommodation for students. In 1917 the pre-medical school was opened; in 1919, the medical school, and it is expected that the new hospital and the training school for nurses will be ready some time this year. The Chinese students begin this course of training by taking up the three-year course in the pre-medical school, which admits thirty-five students selected by examination. The English language is used, and instruction is given in biology, physics, chemistry, mathematics, Chinese, English, and one other European language. After graduating from the pre-medical school, the student takes the first-year course in the medical school, which includes one year spent either as a hospital interne or as an advanced laboratory worker. On the staff of the medical school there are thirty-three medical men, including eight of Chinese nationality. The anatomical section is responsible for the teaching of histology, and offers also optional courses in comparative neurology, comparative dental anatomy, physical anthropology, and haematology. In the department of physiology are taught also materia medica, pharmacology and toxicology. Instruction is continued in the Chinese, English, and French or German languages. There is also a department of social and religious work. Opportunity is provided for a limited number of students to earn a part of their expenses by serving in college libraries and laboratories. The schools are open to women as well as to men.

American Gift to the Institute of Bacteriology at Lyons.—The sum of one hundred thousand francs has been given by Mr. M. Douglas Flattery to the Institute of Bacteriology at Lyons for the establishment of an annual scholarship for the benefit of a student who will specialize in laboratory work on the bacteriology of infectious diseases.

Award of a Mary Kingsley Medal.—The Liverpool School of Tropical Medicine has awarded a Mary Kingsley medal to Dr. Charles Wardell Stiles, United Public Health Service, for his work on the eradication of hookworm disease.

Laboratories for Research on Tropical Disease.—There have been opened at Liverpool new laboratories for research on the origin and treatment of tropical diseases. They are named in honor of Sir Alfred Jones of Liverpool, who made provision in his will for the erection of a laboratory and for the buildings in which the work has hitherto been carried on.

Typhus Fever Prevention.—That poverty, overcrowding, and dirt are intimately associated with the spread of typhus fever has been a matter of common knowledge for some time;

yet it was only ten years ago that Nicolle pointed out that the louse plays an important part in the transmission of the infecting agent of typhus fever and relapsing fever. In the British Isles little practical interest was taken before the war in preventing the extension of typhus in countries where it is endemic and widely prevalent: but when it became one of the greatest plagues in war-stricken countries it became necessary to find some means of checking the epidemic on a large scale. When, early in March, 1915, the British Mission reached Serbia, the epidemic was raging to such an extent that in a period of three or four months there were probably 400,000 cases and 120,000 deaths. In a book describing the work carried on by himself and his colleagues, Dr. William Hunter has discussed in detail the preventive measures which were adopted. As it was considered particularly important that the movements of people be checked as far as possible, all railway passenger traffic was suspended excepting one train in twenty-four hours. This was only one of the measures which were employed successfully. Dr. Hunter's book on this subject, "The Serbian Epidemics of Typhus and Relapsing Fever in 1915," contains a great deal of practical and statistical information of value in the prevention of typhus fever.

Mission Hospitals in China.—The attitude of the Chinese people toward mission hospitals has been considerably altered in the course of the last twenty years. There were only twenty-nine of these hospitals in China twenty years ago. They were regarded with distrust by the natives, and the chief object of the medical staffs was to gain the confidence and friendship of the patients. The conditions of hygiene, nursing and treatment were exceedingly defective and the work was carried on amid many difficulties. Since 1900, one hundred and forty-eight new hospitals have been built, as evidence of the changed attitude of the Chinese people. The benefits of treatment have become so widely recognized that today there is a large number of students, both men and women, studying medicine in the new medical schools established in their native land. An inquiry into the scientific efficiency of mission hospitals in China has been made by Mr. Harold Balme, F.R.C.S., Dean of the School of Medicine of the Shantung Christian University. His conclusions, summarized in a report presented to the annual conference of the China Medical Missionary Association, have been reviewed as follows in the *British Medical Journal*:

"The report shows under what difficulties the work of the hospitals has hitherto been conducted, and indicates that much improvement has still to be effected. Only 63 per cent. of the 193 hospitals are yet able to supply the majority of their patients with clean bedding, and seventy-two possess no bedding at all, or only sufficient for a few of the dirtiest or poorest of their patients. In 70 per cent. the water supply comes from surface wells, and in 33 per cent. it receives no preliminary filtration or boiling; in only 51 per cent. are the patients regularly bathed, while sixteen hospitals report that they possess no bath at all. Sixty-five per cent. have no isolation block; 37 per cent. are not screened for protection from insects; 67 per cent. of the hospitals are dependent for sanitation on ordinary Chinese latrines, usually unscreened. The figures given with regard to the staffing show that there is only one mission hospital bed to every 26,640 people in China; and four hospitals out of five, with an average accommodation of seventy beds, had only one foreign or foreign-trained doctor; 60 per cent. have not more than one trained nurse, 69 per cent. no regular system of night nursing, and 34 per cent. have no nurse at all. It appears from the report that 200 more foreign doctors, 200 more Chinese doctors, 150 new foreign nurses, and 400 Chinese nurses are urgently required."

Announcement of Medical Lectures.—The following announcement of British medical lectures has been made: The Harveian Oration of the Royal College of Physicians, London, will be delivered by Sir Frederick Andrews on October 18; the Horace Dobell lecture by Sir William Leishman on November 2; the Bradshaw lecture by Dr. C. B. Wall on November 4; and the FitzPatrick lectures on the History of Medicine by Dr. E. G. Browne, of Pembroke College, Cambridge, November 9 and 11.

Gift to the University of Adelaide Medical School.—The sum of £15,000 has been contributed by the family of the late Sir John Darling, of Adelaide, South Australia, towards the cost of erecting a new building for the medical school of the University of Adelaide. It is estimated that the erection and equipment of the building will cost approximately £25,000. It will be designed to accommodate the departments of physiology, biochemistry, and histology, and the medical library.

Medical Reports from India.—A number of interesting announcements of health conditions in India have been published in *The British Medical Journal.* The first note states that the most conspicuous feature of the administration of the Central Provinces and Behar in 1918-1919 was the disturbing effect of the epidemic of influenza, which, to a greater or lesser degree, brought the work of almost every department to a temporary standstill. From this cause alone five and one-half per cent. of the population died. The effects of the epidemic will be felt for many years.

A second note reports that a Red Cross Society has been established for India by an Act of the Viceroy's Legislative Council. It is quite independent of the British Red Cross Society and Order of St. John of Jerusalem. The Society is organized on a provincial basis for work both in time of war and in time of peace, and has been admitted to the League of Red Cross Societies.

A third announcement reports the maternity and infant welfare work done by Lady Chelmsford in India. An institute has been opened in Delhi for training the health and maternity supervisors and health and maternity visitors, the former having a training of a year and the latter six months. Those who cannot afford to pay for their training receive forty rupees a month from the association founded by Lady Chelmsford, on condition that they undertake to serve it for three years after they have received their training.

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Obituaries.

ADAM POLITZER, M.D.

The following obituary of Dr. Adam Politzer was written by Sir StClair Thomson and published in the issue of *The British Medical Journal* for August 21, 1920:

"Adam Politzer was what the French call a *grand maitre* in modern otology. Possessed of a charming individuality, he was thoroughly equipped in his youth, and started early on a career in which he became so distinguished. He was well advised by his teachers, who appreciated his talents, and he directed his attention to otology from his earliest years, realizing the opening there was for this specialty at Vienna. Hence he passed several years travelling over Europe, studying acoustics with Helmholtz, histology with Kölliker, and physiology with Ludwig. In Paris he worked in the laboratory of Claude Bernard, and then he came to London to study with Toynbee. There can be little doubt that it was his English teacher who inspired him with his appreciation of the pathological anatomy of the mastoid. Politzer returned to Vienna in 1861, and it was sufficient for him to show his teachers the results of his scientific journeys for them to create a chair of otology, and he was elected as professor. He was not yet 30 years of age. He had only four pupils in his first course, but it is interesting to recall that one of them was Lucae, who afterwards was the well-known professor in Berlin. His name soon became known throughout the otological world, as it was early in his career that he discovered the method of "Politzerizing" the ear. His reputation as a teacher became so well known that there are few aurists who have not based themselves upon his teaching, taking his career as an example and his ideals as an inspiration.

He was a model teacher. Neat and dapper in his appearance, with sparkling intellectual dark eyes and a musical caressing voice, he quickly gained the goodwill and admiration of every pupil. And, in return, he did not forget his pupils, to whom he was devoted. Although I worked with him only for one semester, he presented me with a beautiful dissection of the middle ear, made with his own hands, as a souvenir, which I still treasure. He was enthusiastic and patient, and, although he had only eight beds and had to give his lecture in the middle of a ward, his classes were always crowded. These classes were held every day of the week, except Saturday and Sunday, from 12 to 1, and although he had a private practice to which patients flocked from all over the world, he was seldom five minutes late, and often remained until 1.30 and nearly 2. The course lasted six weeks and cost 20 florins, or, at least, it did so when I attended it in 1893. As Anglo-Americans formed a large part of these classes, most of his teaching was given in excellent English, but I have heard him speak fluently in German, French, Hungarian, Bohemian and Italian during the one lesson. He had other talents: he wrote much; his text book and his methods are known throughout the civilized world; he was always courteous; he had charm; he was a traveller, he was an artist of talent; he was a collector and connoisseur in art, and his skill with the pencil was a valuable asset in his teaching. His hospitable home in the Gonzagagasse illustrated the two sides of his life, there he delighted to show his superb collection of pictures and also to demonstrate his anatomical specimens.

He loved to do the honors to his museum, to show bric-à-brac he had picked up in his many visits to Italy, and to demonstrate his innumerable pieces of normal and pathological anatomy, dissected mastoids, preparations of the labyrinth, or microscopical sections. He was an immense worker; he had a lovable nature; and his life was full and happy, but doubtless his latter years were clouded with the horrors of war. No one, particularly with his wide international friendships, could have deplored the war more than Politzer. While it was in progress I had news of the old professor from a Scandinavian colleague who had been in and out of Vienna several times during the war. He told me coal was so scarce in that city that Politzer, for the sake of warmth, had betaken himself to a boarding-house. Every day, during the war winters, he walked from his boarding-house to his beautiful apartment. There, in spite of his four-score years, he still occupied himself with art and research in otology. . . . . He was indeed a *grand maitre.*"

ALBERT JOHANN HAHN, M.D.

Dr. Albert Johann Hahn, born in Germany on October 4, 1852, died at his country home in Sharon, Vermont, August 1, 1920, of a severe cerebral hemorrhage. At an early age he entered the college at Hildesheim, Germany (1867-74). Coming to the United States, he first completed a course at the New York Eclectic Medical School in 1880, from which he graduated M.D. In 1884, he successfully completed a course at the College of Physicians and Surgeons, Boston. In 1885, Dr. Hahn obtained another medical degree, this time from Dartmouth Medical College, Hanover, N. H. In 1886, he specialized in surgery, gynecology, clinical medicine, physical diagnosis and obstetrics at the New York Polyclinic.

For a number of years he was an instructor of physicians in the College of Physicians and Surgeons, Boston. From here he went to San Antonio, Texas, specializing there in surgery. Coming to Newark, N. J., he was associated with Dr. Edward J. Ill on the staff of St. Barnabas' Hospital.

Malarial troubles caused his removal to Vermont thirteen years ago. Two years of retirement on his little farm so improved his health that he returned to the medical profession, taking up the practice of Dr. E. Allen of Pattenburg, N. J. There he remained in active practice until July 1, 1920, when he made final preparations for a return to his loved New England farm where his death occurred.

Besides his medical abilities, he was extremely well read in the arts and sciences. He was a lover of Nature. He had a fondness for all animal kind. Besides his native language, he spoke and wrote fluently, English, French, Spanish and Latin, while works in Greek and Italian were readily perused by him.

He was a member of many medical societies and lodges at various times, continuing until his death one of the Lehigh Valley Railway's surgeons and a member of The Massachusetts Medical Society.

SOCIETY NOTICE.

Essex North District Medical Society.—A quarterly meeting of the Society will be held at Amesbury Club, 18 Main Street, Amesbury (Tel. 303), Wednesday, September 29, 1920.

Dinner will be served at Star Restaurant, 20 Main Street (Tel. 426-M), at 1 o'clock, sharp.

By request of the Permanent Committee on Cancer of the State Society, as directed by the Council of the Massachusetts Medical Society, this meeting will be devoted to the subject of cancer, and F. B. Lund, M.D., Surgeon to the Boston City Hospital, will present a paper upon "The Early Recognition and Treatment of Cancer from a Surgical Viewpoint" (40 minutes). Discussion is invited (five minutes each).

The President or Vice-president of the parent society will be our guest.

Since the American Medical Association holds its annual session in Boston next June, the state officers wish that all desirable non-fellows be invited to appear before the Censors in November in order that all Massachusetts physicians may be entitled to all privileges of the June meeting. Please notify your secretary of all such.

The next meeting of the Censors will be held at Hotel Bartlett, Haverhill, Thursday, Nov. 4, 1920, at 2 P.M., sharp. A candidate for admission should bring his diploma.

D. D. Murphy, M.D., *President*,
J. Forrest Burnham, M.D., *Secretary*,
301 Essex St. (Room 411), Lawrence.

RECENT DEATHS.

Dr. Herbert Terry died after a long illness at his home in Providence, August 24. He was in his sixty-sixth year. Dr. Terry was born in Fairhaven, Massachusetts, on December 8, 1854, and was graduated at Cornell in 1876. Later he entered Harvard Medical School and received his medical degree there in 1880.

Dr. Terry began his medical practice in Providence. He became identified with the Rhode Island Hospital in 1883, serving in various capacities for 23 years, after which he was made consulting physician. He was physician in the Out-Patient Department from 1883 to 1888, visiting physician from 1891 to 1902, and surgeon from 1902 until recently.

Announcement has been made of the death of Dr. O. Schultz, professor of anatomy and physiology in the University of Würzburg, at the age of sixty-one years.

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Addresses.

REMARKS ON THE THERAPEUTICS OF ESSENTIAL EPILEPSY.*

By L. Pierce Clark, M.D., New York City.

My thanks are due the National Association for the Study of Epilepsy for electing me its president this year. Being the first medical charter member of the society, I can say with a great deal of pride that I have followed its gradual growth with satisfaction. The importance of such a society can be realized when we bear in mind the number of enduring sufferers from this disease aggregate nearly half a million in the United States; less than three and five-tenths per cent. are under special care and only thirteen states care for epileptics numbering seven thousand patients. The public policy of establishing a society like ours in which the purpose is to promote the pathologic, therapeutic, social, and medico-legal study of the epilepsies, seems not only wise but most beneficent in its purpose.

Time does not permit us to cover the many interesting questions and problems of treatment of the epilepsies as a whole, organic and idiopathic, so we shall confine ourselves to outlining some of the more salient therapeutic principles applicable to the care and treatment of the epileptic as an individual. Only too often epileptologists make the statement that the patient, and not the disease itself, is really to be treated; but studies usually lack any very painstaking analysis of just how this wise provision may be put into operation.

It has always been a mooted question just how far one might interpret the nature of essential epilepsy by epileptiform attacks in organic brain disease, or from experimentally induced fits in animals. So long as we maintained that the muscular spasm was the essential syndrome of genuine epilepsy, the analogy worked well; but as soon as we began to take into account the totality of the epileptic as an individual and that the loss of consciousness was the signal symptom, the usefulness of the similarity began to decrease until finally we are forced to the conclusion that though the spasm in organic and in essential epilepsy is probably similar, the initiation of the seizure phenomena is essentially different in the two conditions. There can be little doubt that Hughlings Jackson's chemical and mechanical theory for the spasm of epilepsy,—that of phosphonitrogen instability of cortical elements and the Leyden Jar illustration of the discharge,—is as good as any we have today. Aside from some slight differences as to the actual nerve tracts over which the nerve discharge takes place, we have learned little from organic studies as to the nature of essential epilepsy. In a large series of autopsy studies on the genuine disorder one might have expected to find nerve changes in the cortex analogous at least to those in organic brain disease or experimentation. But these changes in the majority of essential epilepsies were either variable, or entirely wanting. We have been forced to conclude, therefore, that we cannot predict what cortical changes, if any, one may find in any single case of essential epilepsy at autopsy. In view of this anatomic and histopathologic disappointment many have turned their attention from pathologic studies to disfunctions of the different organs, and especially to the disorder of the ductless glands. We may summarize the status of organotherapy by the statement that so far as we know essential epilepsy is not benefited at all by the procedure. The value of such a system of medication seems largely confined to those epilepsies in which the disfunction of the endocrines is demonstrable by other signs than those seen in the epileptic reactions themselves.

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* Presidential address before the National Association for the Study of Epilepsy, New York, June 3, 1920.

Even though the most careful researches of the brain be made in epilepsy, one is at a loss to connect up the changes, if any are found, with the profound deterioration in social and economic efficiency of the epileptic individual. In point of fact there is no more confuting instance of failure of a psychophysical parallelism than the attempt to couple up the cortical changes with the mental factors seen in the disease.

Of recent years it would seem that a much more coherent plan of interpretation of the epileptic individual has been put forward. But before we state this we may consider the so-called affective epilepsies. Perhaps the first impetus was given in 1871 by Westphal, who, in a paper on agoraphobia, cited that classic epileptic fits to the verisimilitude of tongue biting and voiding are not uncommon in agoraphobia and various psychopathic and neuropathic conditions. Others like Spiller, Dana, Stallmann and Oppenheim also published similar papers upon this subject. Bratz, in 1907, discussed at considerable length what he termed affective epilepsy in young neuropathically tainted individuals. In his cases the attacks appeared in childhood and disappeared entirely in later life; the individuals were apparently without any specific makeup of the epileptic personality and showed no progressive mental deterioration. Many of his studies were upon individuals showing evidence of shiftlessness and feeble-mindedness. They showed physical stigmata of biologic inferiority and vasomotor disturbances. A little later Orbison in commenting upon such cases showed the great variability of such peculiar attacks in different and even in the same individuals. But in reviewing all this reported material one is impressed that some of it may be psychic or motor petit mal of true epilepsy, though the major portion of the studies is obviously dealing with various psychoneurotic states that are not at all closely connected with essential epilepsy. Independent of organic disease of the brain as such we know that occasional true epileptic attacks may appear in nearly all the benign psychoses, and particularly in dementia praecox. Indeed, Kraepelin thinks that epileptic seizures may be found in at least twenty-five per cent. of the latter class,—a percentage which is obviously too high. There can be little doubt that attacks in the psychoneurotic are not really epileptic but are convulsive episodes which can be rather easily removed by proper mental hygiene or more definite psychotherapeutic means. Some other investigators, following in the footsteps of these pioneers in studies of the affective epilepsies, hoped to prove a sufficient affective element in many supposedly essential epileptics, and therefore tried to treat them with the same general principles, hoping thereby to bring about great amelioration or cure. The movement as a whole, however, including the best efforts at psychoanalysis, was doomed to failure,—not because there were no affective elements in essential epileptics but because the underlying fault in the latter is a congenitally inherent defect of the instinctive life. We may conclude, however, that there is a very small percentage of functional convulsions of affective origin which is neither hysteric in character nor similar to essential epilepsy, but which is to be put in a class by itself and considered as affective in origin, because of (1) certain psychogenic factors, (2) the absence of the epileptic diathesis, (3) the intractability by drugs, and (4) the response to the psychoanalytic methods and moral training. Thus we see the study of the affective epilepsies did not materially aid the great group of essential epileptics, because the basic anlage from which the two disorders take their origin is quite as different as that existing between the organic and functional epilepsies; and we see the attempt to carry over the therapeutic deductions of epileptiform attacks from gross lesions of the brain to that of essential epilepsy has been so therapeutically disappointing. Largely initiated by the teachings of Hoch and by the personality studies of MacCurdy, Campbell, Kirby and others, I undertook to study the data of the personality makeup of the epileptic individual before the seizure part of his malady put in an appearance.

As we know, from ancient times the essential epileptic has been considered a peculiar type of individual. The salient features of the so-called epileptic personality in its most exquisite and classic evolution are egocentricity, extreme supersensitiveness, marked emotional poverty and rigidity of ideation and mentation. For years this character type has been supposed to develop in direct proportion to the severity and frequency of epileptic seizures upon which it has been assumed to depend more or less directly. Careful analysis has, however, shown that while the most glaring character faults and mental deterioration may be seen in those epileptics with frequent and severe seizures, this is by no means the invariable rule, there being many defects of instincts and evidences of severe habit deterioration in epileptics with but mild seizures. Indeed, many epileptics may undergo increasing impairment in seizure frequency and severity independent of sedatives, and yet such individuals may show by life reactions as well as by psychological tests that the deterioration is progressive and marked. The reverse of this statement may also be shown. In consequence we have come to realize that while the severity and seizure frequency on the one hand, and instinctive defects and mental defects on the other, may be to some degree coincident, they bear no essential mutual relation. On the contrary both syndromes are the expressions of a deteriorating process not summated in fits or their congeners. It was found that in practically all there was nothing wanting in mental makeup not seen in the frank and veteran epileptic. The character faults varied, perhaps, in the amount and degree present in such potential states before seizures, but the character defects were sufficiently glaring to mark such individuals as pathological personalities portending a possible epilepsy of later life. Given such a character makeup in the predisposed individual, it is comparatively easy to understand how the growing adaptive stresses of life may break such individuals into frank manifestations of their disorder. In a paper read before this association last year I outlined in detail the stresses of the different epochal levels and attempted to show how the relatively trivial causes given by patients and relatives are only *real* causes when one bears in mind the type and character of the individual who experiences them and present an epileptic reaction as a result.

Given the inherent defect of makeup just detailed, it is easy to comprehend how all forms of undue physical and mental stress may operate deleteriously upon the epileptic. The gradations of epileptic reactions vary from day-dreaming, lethargies, petulance, sullenness, and outbursts of impatience and temper beyond the casual, until there succeeds a series of petit mal attacks or a severe grand mal, when the lowering skies in the epileptic's life are dispelled for a time until the stresses again accumulate to an explosive level. So long as normal consciousness is maintained the stress may work its evil consequence in ways well known to all. The epileptic reaction from its mildest to its severest manifestation is really a protection, for it obliterates reality and reduces the subject to the lowest level of organic response—that of a comatose state. Hence the fit is really a protective mechanism. It withdraws or reduces the subject's attachment and adjustments to reality. It dispels an intolerable demand and the epileptic retreats to a state of harmony and peace. In the retreat after incomplete attacks we frequently encounter unconscious strivings and conflicts that have baffled the subject. So exogenous causes, physical and mental in character, slight as they may seem to be, precipitate a conflict which springs the fit-gun and a series of conflicts of different levels in the unconscious are exposed until after the severest grand mal attack the subject is reduced to the lowest level, comparable to earliest infantile life. Thus we find in the mild and transitory deliria of the automatic phase after petit mal attacks the subject may say or do certain things which may be pieced together and minutely analyzed. Like the mental content in manic states or drug and fever deliria, these spontaneous productions have to do with the conflicts of everyday life. Then appear the successive deeper levels of emotional strivings and conflicts. For instance, at first the epileptic attempts to rid himself of an onerous task or unpleasant companions; then deeper motives such as sexual strivings are uncovered and in the deepest level he has made a retreat to the home, is in the cradle or the mother's arms, etc.

It is unnecessary to say that all the foregoing description of the epileptic makeup is not new, neither is the factor of undue stress entailing epileptic reactions, nor the mechanism of analysis of the mental content of the twilight, befogged or transitory deliria after the fit. One might also point out that the therapeutic advantages derived from such studies are but attempts at more specific means of treatment of epileptics already in empirical practice. For instance, the elaborate systems of colony life in which the epileptic can comfortably and easily adapt himself are but conscious recognitions of the epileptic's peculiar makeup and an effort that his life stress level shall be approximated.

What are the specific methods for training an epileptic? In handling the individual epileptic it is first necessary to analyze the specific conflicts which he has to meet in life and note his type of mismanagement of them. Then to consciously increase the patient's insight into the situation is absolutely necessary. It has been the custom so long to merely note the epileptic defect and not make him aware of his own inherent fault that this method alone is almost revolutionary. Heretofore this specie of autognosis, or self-knowledge, has been left to well-meaning friends, nurses, religious instructors or tutors, and has not been brought into the physician's own armamentarium. Perhaps it has been held to be of so little medical moment, or that the process of wise teaching entailed has been thought to be so time consuming that the physician has neglected his plain duty. But since the newer principles of reëducation and psychoanalysis in the neuroses have been established, similar methods are really found to be of service in essential epilepsy. Proceeding with this method sooner or later one finds that the epileptic individual possesses a very crude type of personality. No mere explanatory talk about his character-defect will remove it. Essential epilepsy in its inability to be analyzed away demonstrates that it is not a neurosis but a profound disorder of the instinctive life. Analysis but points out the glaring defect and it is then possible to lay down a daily schedule of character training and practice in concrete instances wherein the epileptic may learn day by day, little by little, the means of overcoming his faults of character. Analysis but points out the specific reëducation possible. In many instances notes of the analyzed defects should be taken by the patient himself or summarized by the teaching physician so that the epileptic individual may go over it again and again. He is apt to forget the explanatory talks as a protective mechanism common to all humanity. The fit itself obliterates the imprint of the corrective advices. Thus it would seem that the epileptic seizuré is a magic talisman in more than one direction. It reduces the sting of the affective stress which springs the epileptic reaction. Be it fit or explosive temper, it carries off the keenness of the epileptic initiation of helping himself and obliterates the teachings formerly given him.

The foregoing hastily sketched methods of psychologic training for epileptics is universally applicable to all essential epileptics. In the severer states if the epileptic has mental content in his automatisms, by free association or conscious directed inquiry at the interval period this content can be used as an instance for applying the proper mental vaccine. The material, as before stated, is just as much a part of the precipitating cause of his mental indigestion as the data obtained in psychogenic deliria. In brief, nothing is lost in effort that increases the patient's insight into the instances of the mishandling of his instinctive life. One needs to bear constantly in mind that the physician is dealing with an enormously sensitive individual and that any method of explanatory talk is bound to be painful and, oftentimes, when it is carried too far or too fast, actually produces attacks by its very stressfulness. Perhaps preparatory talks upon character problems of everyday life may first be undertaken to advantage. The inclusion of a large group in the patient's specific problem of defect removes the sting of a direct personal indictment. Judicious praise of the good traits may begin and end an interview. Sufficient experience has now been obtained to show that improvement in the individual epileptic is demonstrated in the non-recurrence of the conscious or unconscious conflict, which latter is uncapped in the automatism. If the defect crops up time and again, it unfortunately shows how deeply the instinctive defect is and the relative hopelessness of a cure. Even then one should not be deterred in following up a modified plan of the same sort of autognosis to ameliorate or retard the deterioration. Even when analytic teaching is not done directly, one may apply it by indirection in the specific daily duties of the epileptic's life. One may thus expand the egoistic outlet of interest and teach by concrete methods the proper objectivation of the epileptic's insatiable desire for power and dominance over reality. His very baffled rebuke shown by the attack as a result of a too intensive striving may serve as adjustment talks to his continued betterment.

Can we incorporate these new principles in the public institutional life? I think so if one will but consider an extra expansion of the sociological aspect of the nursing care. The nursing staffs ought to have a continued study of conduct and behavioristic psychology and its application to their charges. The nursing feature of epilepsy has less of the bedside character than the insane, and it ought to be very easy to instruct them to this new social and personal adaptation method. Less attention might be paid to the accurate analysis of the convulsion and more to the stress and conflict of the epileptic's life. More neuropsychiatric workers might be employed in whose activities as assistants to the physician a proper lay support of the more complicated teachings and analyses would be afforded.

We may conclude that the present modern trend in a specific training of the epileptic individual begins in a careful analysis of the instinctive fault in each case. By conscious analysis of his daily conflicts and those that specifically seem to precede his seizure episodes, as well as those conflicts and strivings that appear in the automatism, one gains a definite point of attack to increase the patient's insight. Teaching an epileptic his essential faults and the means for overcoming them is the continued plan that promises much for the future. This principle incorporated into the present mental and physical regimen, already carried out so admirably in many special sanatoria and colonies for epileptics, gives us more precise methods of attacking our great problem, the healthful alteration of the basic fault of the epileptic constitution. Unfortunately the method throws an enormous task upon all having to do with epileptic individuals; but can we afford to neglect our new visions and opportunities?

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A PLEA FOR THE EARLY DIAGNOSIS OF EPILEPSY.*

By Edward A. Tracy, M.D., Boston.

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Genuine epilepsy is a progressive disease. It often begins with symptoms that while noticeable, yet are so brief-lasting in character that they are not recognized at their true value, for they are the index of the presence of one of the most appalling diseases that afflict humanity. The chronic epileptic is always in proximate danger of injury, or accidental death, and therefore the source of incessant anxiety to relatives.

The beginning of epilepsy is frequently associated with vertigos, sudden pallors, fainting spells, and "absences" (brief lapses of consciousness in which the child stares for an instant. In an incipient epilepsy, one or more of these symptoms may be present for a year or more, and, with periods of irritability, may be the only abnormal manifestations noticed in the child. Suddenly a convulsion occurs, to be repeated at intervals. So plain then is the diagnosis of epilepsy that "He who runs may read": the incipient stage of the disease has ceased, the chronic stage is entered upon. The progress of the disease continues, for a majority of epileptics become dements. The brain in the beginning is but slightly or not at all touched, but as the disease progresses into dementia, the brain degeneration becomes marked. The hoplessness of curing advanced epilepsy with the brain damaged as in dementia, is based on this involvement. I do not say that treatment in chronic epilepsy before the stage of dementia is hopeless. Much can be done and is done by medication and diet to enable many chronic epileptics to live useful lives. Science undoubtedly in the future will teach more about the faulty metabolism that plays so large a part in the production of the periodical attacks of convulsions characteristic of the chronic stage of the disease. It is not too much to expect that the metabolic toxins of the disease in time will be identified and a neutralizer for them found. This means that a brilliant place in epileptology awaits the research worker in metabolism, whose work, when done, will make the treatment of chronic epilepsy truly scientific, and not the groping thing it is.

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* Address made to the nurses of the Boston public schools, at their meeting, Sept. 3, 1919

For incipient epilepsy, science offers much more than hope, since research work has uncovered facts that indicate the essential cause of the disease to be an over-irritability, a hypertonia of the sympathetic nerve fibres, that treated early can be overcome by drug action. Research work before published* has shown that genuine epilepsy is marked by disease of the sympathetic nerve fibres. The diseased condition of these fibres is manifested by the abnormal sympathetic reflexes and chronic vasoconstriction spots found in epileptics. These diseased sympathetic manifestations in living epileptics are explainable by the diseased condition of the sympathetics and ganglia found by Echeverria in epileptics after death. The objective signs that have been discovered in epileptics, the abnormal sympathetic reactions and chronic vasoconstriction spots, phenomena that can be seen, measured, and photographed, are too important to be further ignored, since they serve in the diagnosis of the disease.

In incipient epilepsy there has been found, as before stated, a hypertonia of sympathetic nerve fibres. By hypertonia is meant a true over-irritability of the fibres, shown by the sympathetic reflexes being more intense and appearing quicker than in the normal individual. The hypertonia that is manifested by the intensity in color of the vasoconstriction reflex (the white streak on the skin which follows stroking with the vasomotor tester) there is no measure for. Appreciation of the degree of color intensity comes from observation and practice in making the tests. But the hypertonia that manifests itself by the abnormal quickness with which the reaction appears, is readily measured with the aid of a stop-watch.

The hypertonia found in incipient epilepsy prompted the query, could the hypertonia present in these cases be overcome by drug action, and if so, with what result? The drug required to overcome an overactivity of sympathetic fibres should be, evidently, a sympathetic paralysant. The only such drug I learned of in my readings is ergotoxin phosphate, found, by Elliot, the English physiologist, to be a sympathetic paralysant in animals. I imported a small quantity of this drug, made a very dilute solution of it in water, and injected a few drops of the solution into my arm. The reflex vasoconstriction reactions produced near the site of injection came slower than before the injection. Control injection of plain water was negative. I therefore concluded that ergotoxin phosphate is a sympathetic paralysant in man. At this period I had been familiar with a drug reported by Dr. R. E. Waterhouse to be curative in some cases of epilepsy—the drug oenanthe crocata. I injected a weak solution of this drug into my arm and found it slowed the sympathetic reaction in a similar manner to ergotoxin phosphate. The conclusion followed that oenanthe is a sympathetic paralysant. The oenanthe preparation being a tincture, and as alcohol is a nerve irritant, I asked Prof. John Uri Lloyd if a preparation of the drug without alcohol could be prepared. He kindly prepared and supplied me with colloidal oenanthe, alcohol free, and this preparation I have used in the treatment of epilepsy. In incipient epilepsy it has proved curative.

Just as the stream near its source can be controlled, while further on, from various causes, it has become the impetuous torrent that defies all the powers of man—so epilepsy in its incipiency, when the current of nerve action is but slightly awry, happily yields to treatment which restores the current to its normal bounds, while later in the progress of the disease the pathologic stream of nerve force increases so that man is powerless against it. For, since Aesculapius, physicians have witnessed the manifestations of this force in convulsions, without being able to stay them.

Facts carefully observed showing the presence of hypertonia of sympathetic fibres in incipient epilepsy and the disappearance of this hypertonia together with the associated symptoms of vertigo, irritable spells, dizzy headaches, and fainting spells following the use of oenanthe (which experiment shows to be a sympathetic paralysant) are the reasons for this plea for the early diagnosis of epilepsy. For when the disease is allowed to progress we have not alone diseased sympathetic fibres, but a secondary hyperirritability of cortical cells (hence the convulsions) and in place of contending with the stream at its beginning, we are confronted with a very torrent of pathologic nerve energy that to science is as yet unmastered.

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* BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. clxxviii, Nos. 23, 24, 25, and 26.

Having discussed somewhat the work upon which this plea for the early diagnosis of epilepsy is based, a brief consideration of the means taken to render it effective will be in order. The Clinic for Nervous and Epileptic Children was established at the Forsyth Dental Infirmary, at the request of Dr. Devine, our esteemed Director of Medical Inspection of the Boston Public Schools. This location for the Clinic was sought because it was thought its location where other duties brought you, would lessen the work attached to the investigation of the epilepsy cases in the schools. These cases, as you know, are to be brought to the Clinic (Saturdays, 9 to 10 o'clock) so that they can be diagnosed for the medical inspection records. In regard to the discovery of the cases of incipient epilepsy now in the schools unrecognized, it is you (whose duties bring you in contact with the children, parents, and teachers) who have the greatest opportunity for service. Bear ever in mind, therefore (and let parents and teachers know the fact), that incipient epilepsy manifests itself by vertigo (dizziness), pallor, fainting spells, and brief lapses of consciousness. Children with any of these symptoms ought to be examined for the objective signs of epilepsy. If these are found present, careful treatment with colloidal oenanthe is indicated.

In conclusion, I desire to thank Dr. Devine for the privilege of addressing you on the subject of epilepsy. I am confident that with your coöperation and that of the school teachers, we school physicians will make progress in the work that has been undertaken—the tabulation of the cases of epilepsy in the schools.

Original Articles.

PROSTATIC OBSTRUCTION.*

By Arthur H. Crosbie, M.D., Boston.

In this paper I shall not endeavor to follow the long years of groping in the dark for a safe method of relieving prostatic obstruction. The history of these dark days has been admirably covered in a recent paper by Dr. H. G. Bugbee. During the past fifteen years there has been a very marked decrease in the mortality of prostatectomy in the hands of the expert. In this paper I shall endeavor to show some of the reasons why this decrease has taken place. It is not, as many well believe, because we have become so much more proficient in the technique of the operation. From a surgical standpoint prostatectomy is not technically extremely difficult. The real reason for the lowered mortality lies in the more intelligent preoperative and postoperative care. In this care there is one thing that stands out preëminent and that is renal insufficiency, and renal insufficiency is the keynote of my paper tonight.

Let me explain what I mean by renal insufficiency. I refer to the condition in which the kidneys may not be organically diseased, but which from reason, usually obstruction to the outflow of urine, have become embarrassed and cease to functionate or are much retarded.

A typical extreme example of this is seen in a person with both ureters tied off or with calculous anuria. The symptom complex arising here is identical with the condition that we have to deal with in varying degrees in handling cases of prostatic obstruction. The severe type we sometimes speak of as surgical uremia. This condition differs very markedly from ordinary uremia that comes from nephritis. There is no great rise in blood pressure and there is no evidence of oedema unless there is some accompanying disease such as decompensated heart or nephritis. The outstanding features of renal insufficiency are: (1) dry skin, (2) dry and coated tongue, (3) flatulency, soft distention, in extreme cases amounting to almost complete paralysis of the bowels, (4) digestive disturbance, loss of appetite, and sometimes nausea and vomiting, (5) sluggish mental condition, drowsiness, mild delirium, and in the late stages complete coma. Perhaps I can best describe the symptoms by referring to a case of calculous anuria I had the opportunity to observe several years ago. The patient, a man of forty, entered the hospital complaining that he had been unable to pass his water for two days. He had no desire to, but felt that something must be wrong. The man had no appearance of being sick. He had good color, temperature was normal, pulse not elevated, blood pressure not elevated, there was considerable soft distention of the abdomen, the tongue was rather dry, but not coated. There was no urine in the bladder. The next day the patient's condition was about the same. By some mistake an erroneous record of forty-five ounces of urine was placed on the patient's chart, and the visiting surgeon seeing that and seeing that the patient seemed comfortable and there was no elevation of pulse or temperature, passed him by. Toward night of this day the patient had some headache, his bowels had moved with enemas, but he was still distended. His tongue was dry and decidedly coated. There was no oedema. The day following, the patient was practically in coma and could be roused only with difficulty. A nephrostomy was done, but the patient never rallied, and died the next day. I do not pretend to report this case fully, but describe it as being typical of renal insufficiency. It may perhaps seem that I have digressed from my subject, but to understand fully what a man has to contend with in dealing with prostatic obstruction a clear understanding of renal insufficiency in all its phases is necessary.

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* Read before the Springfield Academy of Medicine, May 11, 1920.

There are, roughly, three types of obstruction to consider: (1) the adenomatous type, the large benign prostate, into which class comes the median lobe type which is so apt to act as a ball valve. In this class there is a marked increase in the glandular elements of the prostate. (2) The fibrous prostate. In this type the prostate is usually small and there is a decrease in the glandular elements and an increase in the fibrous tissue. Occasionally you see a combination of both the adenoma and the fibrous prostate in the same man. The fibrous prostate can obstruct just as completely as the large adenomatous type. (3) Carcinoma of the prostate.

Etiology. Why it is that in a certain per cent. of men who pass fifty years of age the glandular elements of the prostate hypertrophy no one knows. It certainly has nothing to do with the indiscretions of youth, as it is found in every type of man. As to the fibrous kind, I am firmly convinced that in a long standing inflammation of the prostate gland many of the glandular cells become destroyed and are replaced by fibrous tissue, and that predisposes to the formation of the fibrous prostate. I believe, too, that the converse is true; that a man who has had a long standing inflammation of the prostate with resulting destruction of much of the glandular tissue is much less likely to have adenoma of the prostate. As to the cause of carcinoma of the prostate we are still in the dark.

Diagnosis. In examining patients where there is a question of prostatic obstruction it is well to have a regular routine. The first thing I do is to go over the reflexes carefully in order to rule out any lesion of the cord. Anyone who has removed a prostate, in a case where the inability to empty the bladder was due to tabes, will never be caught again. There is one test that I use in doubtful cases, where there is a question of a cord lesion being responsible for the residual, that is of value if properly used. With a cystoscope or a metal catheter in the bladder, I fill the bladder with fluid and then tell the patient to pass it through the instrument. Now, of course, the abdominal muscles will come into play at first and there will be force to the stream. If the inability to empty the bladder is due to a nerve lesion the last ounce or two will run out of the cystoscope without force. If, on the other hand, it is due entirely to obstruction at the bladder outlet all the fluid in the bladder will come out with force, even to the air bubbles in the bladder. As I said before, one must always bear in mind the influence of the abdominal muscles. I have often found this test helpful to use in connection with other tests.

The next thing is to do a general physical examination. In doing the physical examination especial care should be taken to palpate and percuss the bladder region. In many cases of long standing obstruction the chronically overdistended bladder can be felt well above the pubes and often up to the umbilicus. Not infrequently in these cases of extreme overdistention the main symptoms may not be referable to the bladder, but be wholly those of renal insufficiency. I will never forget a patient of Dr. Chute's that I saw some years ago who had no urinary complaint, but looked as though he had a carcinoma of the stomach or some other wasting disease. His symptoms were mostly digestive, with nausea and vomiting. He had a bladder up to the umbilicus, caused by a benign obstructing prostate. He was entirely relieved by suprapubic drainage. A rectal examination is now made to determine in a general way how much hypertrophy of the prostate there is and to discover whether the prostate is elastic and movable. In most cases of malignancy one is led to suspect it by the firmness of the prostate and by the fact that it is fixed. Of course, there are many things that are important to know that cannot be elicited by rectum. It is impossible to tell how much intravesical enlargement there is. A prostate that feels normal by rectum may have a median lobe that is causing complete obstruction. Information of this sort can be obtained only by means of the cystoscope. Having obtained what information we can by rectum the patient is then asked to pass all the urine he can. The abdomen is then palpated to see if the bladder can still be felt. If the bladder is not palpable and the case does not seem urgent, I put the man on hexamethylenamin grains x, three times a day, and have him return in two or three days. This gives time for careful examination of the urine. I prefer not to pass any instrument to a bladder that may have residual urine, until the patient has been on hexamethylenamin.

At this point it might be well to discuss the advisability of cystoscoping all cases of prostatic obstruction. I extremely disagree with some writers who advocate cystoscoping always before starting the operative procedure. There is a type of man with obstruction that I not only do not believe in cystoscoping, but also believe it unwise even to pass a catheter. This is in the old man with the chronically overdistended bladder, the bladder often remaining as high as the umbilicus, and especially if the urine is clear and uninfected. This man with kidneys embarrassed by long back pressure, although he may seem pretty well, is on the brink of a volcano and it will take very little to upset the equilibrium of his kidneys and bring on renal insufficiency. When the urine is uninfected the kidneys have had no opportunity to build up an immunity. An infection started by instrumentation may travel like wild fire to the kidneys with extremely disastrous results. One should be especially careful if any of the signs of renal insufficiency are present. A man of this type should have suprapubic drainage at once.

After the patient has taken hexamethylenamin for a couple of days we are ready to proceed with further investigation. The first thing to do is to have the patient urinate and then pass a catheter and see how much residual, if any, there is. If the patient is a suitable one for cystoscopic examination we then proceed with that. 'With the cystoscope in we are able to determine the amount of the intravesical enlargement of the prostate, to make out a median lobe if one is present, observe the anterior commissure, look 'for tumors and diverticula. It usually is not necessary to catheterize the ureters unless there is something that points to a kidney lesion.

Having completed our examination we are ready to advise the patient regarding operation. In my opinion one should be guided by the amount of residual in advising operation, unless the process suggests malignancy. If the prostate feels malignant operation should be advised, irrespective of the amount of residual urine unless it is so advanced as to be hopeless. Even in some of the advanced cases of carcinoma where the obstruction is great, quite a long period of relief can be given by a partial palliative perineal prostatectomy. In considering the amount of residual I generally put six ounces as the dividing line. In cases with less than six ounces, unless the symptoms of frequency and urgency are very marked, I am willing to wait and observe them from time to time. If the residual is six ounces or more, I feel that operation is advisable, for from then on there is danger of back pressure on the kidneys, which is the real danger in prostatic obstruction.

Having decided upon operation, the next thing is what form of operation shall we advise. Roughly speaking, men with the large benign prostate should be done suprapubically by the two-stage operation and men with the small fibrous prostate and the malignant prostate should be done by perineal route. Most cases with residual urine that are to be operated on by the perineal route should have the bladder put at rest by an inlying catheter for a week or ten days previous to operation. In this way and by forcing fluids the kidneys can be brought to their highest efficiency. In some cases, however, where the residual is large and the back pressure on the kidneys is long standing and the patient shows signs of renal insufficiency, such as dry coated tongue, distention, digestive disturbances, etc., the inlying catheter is not a safe procedure. There is not the slightest question but what the safest and most efficient way to drain the bladder is by suprapubic operation. A catheter may block up and the infection plus back pressure may in a few hours do inestimable damage. With a large tube in the bladder, above the pubes, there is bound to be free drainage. If the tube blocks up the urine will escape around it. When in doubt drain by a suprapubic tube. It is better to do it at once than to be forced to do so as a secondary procedure. In the grave cases, it is much safer to drain this way, even if a perineal prostatectomy is contemplated later. Having a suprapubic opening in no way contraindicates a secondary perineal operation. The suprapubic opening will heal just as readily as though there were not a perineal incision.

I believe that even cases almost moribund should be given their chance. I have seen a man come into the hospital in coma, almost ready for the undertaker, who has responded quickly to drainage and hypodermoclysis and has later come to prostatectomy. Of course, if you follow this procedure you are bound to have a certain number who will never rally enough for further operation, but you have the satisfaction of knowing that you have given them their chance.

Before proceeding to the operative technique, just a word about one form of suprapubic drainage that is sometimes used, and that is by introducing a catheter suprapubically into the bladder through a trochar. This of course gives good bladder drainage, but you lose the important walling off of the sinus that you get in a free opening. If this method is used much new tissue must be opened when the final operation is done. If sepsis gets started in this it just adds one more handicap for the patients to fight against after prostatectomy, which is just what we want to avoid.

I will describe very briefly the method I use for the preliminary suprapubic drainage. It is always done under local anesthesia and can be done without any great amount of pain, if sufficient care is taken in anesthesia. One-half to one per cent. of novocaine is used. I prefer a 10 c.c. syringe with a long needle. The skin is carefully infiltrated along the line of incision. The needle is then plunged through the fascia and the muscle infiltrated thoroughly. Often in doing this the bladder wall itself can be reached. After the injection it is well to wait about ten minutes for the anesthesia to take full effect. An incision is then made seven or eight cm. long in the median line above the pubes. The incision is carried through the fascia and then the muscle is separated, usually by blunt dissection. Having separated the muscle, one comes to the lower reflexion of the peritoneum over the bladder. This fold of peritoneum is gently pushed up by the gauze dissection. This is apt to cause some pain produced by pressure on the overdistended bladder, but this cannot be avoided. In pushing the peritoneum up care must be taken not to separate the bladder from the pubes. If this is done, there is much greater danger of sepsis. Having exposed the bladder wall, which will be recognized by the large veins and the muscle bundles, two stay sutures are placed side by side in the bladder wall. A knife is then thrust into the bladder between the stay sutures. An opening large enough to admit the forefinger is made. All the urine in the bladder is allowed to escape, no matter how much the bladder is overdistended. With a free opening in the bladder this never does any harm, as it sometimes does in emptying an overdistended bladder by catheter. The finger is introduced gently and the contour of the vesical outlet made out and stones searched for. This investigation is of especial value in cases that have not been cystoscoped. Any stones present can be gently lifted out with stone forceps. A half-inch rubber tube is then inserted into the bladder. This fits snugly in the hole made in the bladder and there is no need of any bladder sutures. A rubber wick is placed below the tube in the prevesicle space and one above the tube. The wound is then closed snug to the tube. The tube is held in place by a linen suture. A right angle glass tube is placed in the rubber tube to facilitate drainage.

During the process of drainage there is ordinarily no need of irrigating the bladder. If the bladder is very foul I pass a small catheter through the suprapubic tube and irrigate gently daily for a few days until the bladder clears up. Sometimes the urine is blood tinged for a while following operation. It is needless to say that the second operation should not be undertaken until this has stopped.

Now that the obstruction has been overcome and the bladder placed at rest, either by suprapubic cystotomy or catheter drainage, we are ready to enter upon the most important part of our task, that of preparing the patient for the final operation. I consider this period of extreme importance. The kidneys have been relieved of the embarrassment of back pressure and our task now is to bring them to the highest function possible. We can take as much time as necessary to do this. Do not hurry, so long as the patient is improving. The first few days after the preliminary cystostomy are apt to be the most trying, especially in the men with tremendously overdistended bladders and non-infected urine. We must constantly be on the alert for the first signs of renal insufficiency. Kidneys that have been working against back pressure are very prone to lose their balance when the pressure is removed, and are apt to shut down completely. How are we going to fight this? It must be ruled with an iron hand. Every phase of renal insufficiency must be borne in mind and combated. In the first place the intake of fluid must be forced to the limit. This is done by mouth, by rectum, and by hypodermoclysis. I am never satisfied until the patient is excreting from 80 to 100 ounces in twenty-four hours. If the kidneys begin to shut down I give 1000 c.c. of fluid by hypodermoclysis three times a day until a satisfactory output is reached. The only contraindication to hypodermoclysis is the appearance of oedema.

The distention must be attacked by catharsis by mouth and by enemata. As many enemas a day must be used as are necessary to keep the distention down. Do not be satisfied by ordering one and letting it go at that.

The more marked the renal insufficiency is, the more drowsy will the patient be and loath to leave his bed. This must be overcome by getting the man out of bed, preferably into a wheel chair and out of doors. The fresh outdoor air is a great tonic for these old men. If the patient's condition makes it impossible to get him into a wheel chair, have him propped up in bed and have the bed moved out of doors for several hours each day. As far as the cystotomy wound is concerned, there is no harm in a patient being out of bed, and even on his feet, a day or two after operation. If a man is addicted to the use of alcohol or tobacco see that he is allowed the solace of these. I will never forget one man whose renal insufficiency was exceedingly stubborn: he had hiccoughed steadily day and night for five days. I finally asked him if he could think of anything that he would like. He replied that he would like a cigarette and a bottle of beer. He was provided with these and immediately began to pick up and we had no further trouble with him.

The decision as to when to remove the prostate is not a question of time, but wholly of the patient's condition. Wait months, if necessary, to bring the man into a satisfactory condition. If a cystostomy has been done never go ahead with the second operation for a week or ten days, as this gives time for a complete walling off of the prevesical space and aids rapid healing after operation.

The function test is an aid, but must not be depended upon alone as to when to operate. Be guided by his general condition. The tongue must be clean and moist, the kidneys must be excreting freely eighty to one hundred ounces in twenty-four hours; he should be eating well and sleeping well; the tendency to distention must be overcome, and the mental state must be good. So long as a man is gaining daily, hold off. Patients naturally desire to hurry and get the thing over with, but do not be influenced to operate until you are satisfied that nothing more can be gained by waiting.

The question of anesthesia for the final operation is an important thing. I am very much averse to ether as it checks the excretion of the urine temporarily and also upsets the stomach so that the intake of water is much decreased for a good many hours. Either spinal anesthesia or gas oxygen should be used. Personally, I much favor spinal anesthesia. I find it satisfactory for both types of operation. Even in the exaggerated lithotomy position required in the perineal operation I have had no trouble with it.

I had not meant to say much about the operative procedure, but when only last year a surgeon recommended a large suprapubic incision, with free exposure to the bladder, in order to suture bleeding vessels in the prostatic capsule, I feel it is time to protest. The bleeding can be entirely checked in other ways and still retain the great advantage of walling off that we have gained by suprapubic drainage.

In doing the suprapubic operation the left leg is slightly flexed and the fore and middle fingers of the left hand are inserted into the rectum, thus elevating the prostate. The forefinger of the right hand passes through the suprapubic opening into the bladder and enters the internal meatus. The finger then breaks through the mucous membrane of the urethra and prostatic capsule and the prostate is shelled out piece by piece, the fingers of the two hands working against each other. The pieces are lifted out with stone forceps as fast as they are freed. As soon as the prostate is all out a strip of gauze is packed into the prostatic cavity against the fingers of the left hand, which are still in the rectum. Pressure is kept on this gauze for a few minutes and then removed. If there is still bleeding, the process is repeated. This brings out one advantage of spinal anesthesia over general anesthesia: one can take his time and does not need to hurry to get the patient out from under anesthesia. I have found, too, that due to the lowered blood pressure, the bleeding is never so profuse as it is under gas and oxygen. If bleeding persists, a catheter is passed through the urethra to the bladder and then a strip of gauze is packed tightly into the prostatic pouch around the catheter and the end of the strip brought out through the wound. If this packing is well done it will control the bleeding unless there is something like hemophilia or jaundice to prevent the blood clotting. In such cases it is necessary to keep up the bimanual pressure until the bleeding has stopped absolutely. In most cases the bleeding is easily stopped and a catheter is then passed to the bladder. A linen suture is placed through the eye of the catheter and it is dropped back to the desired position in the bladder and is anchored there by fixing the linen suture to the skin. This suture is tied in a bow knot so that in the future the position of the catheter can easily be changed. After this is done a half-inch rubber tube, similar to the one used in the preliminary operation, is inserted into the bladder. For closing the incision one or two silk worm gut sutures as a rule, is enough, as there has been no new cutting. No irrigation is used, as this merely increases the bleeding. I mentioned only the packing with gauze to stop bleeding because that is the method I use and like best. The Hagner bag is satisfactory, but is more cumbersome and more difficult to manage. I really feel more at ease with a case well packed than with the Hagner bag in. As a matter of fact, most cases need nothing more than pressure with gauze for a few minutes and when that is removed the bleeding has almost entirely stopped. It is usually merely a venous ooze that is easily controlled.

The perineal operation is decidedly more technical, but for the proper cases is a most satisfactory one. The patient must be in the exaggerated lithotomy position, which can be accomplished only by using some such device as the Halsted board. I will not go into details of this operation as no man should be rash enough to attempt it from a mere description. It is important to look out for certain things in this operation. One must bear in mind at all stages that he is working in close proximity to the rectum and great care must be exercised not to cut through its mucous membrane. The destroying of the external sphincter is a thing that is apt to happen in the hands of a novice. I think this sometimes happens in the desire to keep as far as possible from the rectum. The urethra must be opened at the tip of the prostate and not outside of this point. After removing the prostate never fail to explore the bladder outlet with the finger to feel for a median lobe that has escaped and also for stones. I have seen a median lobe entirely overlooked in a perineal operation. I like to have a pair of small tubes for drainage. They pass through the perineal wound into the bladder. This is in addition to the catheter, which passes the full length of the urethra to the bladder.

The after care of cases of prostatectomy is much the same as the care preceding operation. Renal insufficiency must be fought from the start. If you have been forced to give ether always give a liter of salt solution by hypodermoclysis at once to take the place of the water that will not be drunk for the next few hours. This should be done, no matter how well the patient seems. It is so much easier to prevent renal insufficiency than it is to fight it after it arrives, that you must anticipate it and keep a few jumps ahead of it.

The actual care of the operative wound is not difficult. One is more apt to do too much than too little. Following the suprapubic operation, if the wound has been packed, this packing can safely be removed on the second or third day and the bladder gently irrigated with warm boracic acid daily. If a suprapubic tube has been used this is removed as soon as the urine ceases to be bloody, which is generally on the second or third day. After removing the suprapubic tube no attempt is made at first to close the opening. The urine is allowed to drain either through the catheter or through the incision, whichever way it goes easiest. It does no harm to have the urine drain freely into the dressing, provided these are changed often. Much harm can be done in a prolonged effort to get the catheter into a position to drain best. I have seen one of these old men completely exhausted after a half hour has been spent adjusting the catheter. If a catheter does not drain well I make one or two attempts to get it into a better position and then stop. Sometimes after a few days a feeble old man will be much annoyed by the irritation of the catheter. Not infrequently if the patient is not doing well with the catheter in, I take it out for a few days and get him up out of bed unhampered by any harness. This little change will sometimes make him more comfortable and start him on the road to recovery. There is plenty of time to close the suprapubic wound after the immediate effect of the operation has passed. All of these men, whether suprapubic or perineal, should be up and out in the fresh air as soon as possible. After the operation, of course, it is difficult to determine just how much urine is being excreted. One has to watch closely for signs of renal insufficiency. If there is any doubt as to the amount excreted being satisfactory, hypodermoclysis should be used freely. It can do no harm and its omission may do much harm.

A complication that is very apt to come after prostatectomy of any sort is epididymitis. This is very annoying, but is seldom serious. It is generally ushered in by chill and rise of temperature, often before anything can be felt locally. The catheter should be removed at once and kept out until the process has subsided. Elevation of the testicles and an ice bag gives the greatest amount of relief. If the pain is very severe morphia may have to be resorted to. However, in handling cases of prostatic obstruction I try to avoid morphia as much as possible. The epididymitis usually quiets down in a few days. Occasionally an abscess forms that has to be opened under local anesthesia. The best way to prevent epididymitis is to keep the testicles elevated at all times.

At the end of ten days or two weeks the wound, whether perineal or suprapubic, has usually closed so that the man can void naturally. Some cases take longer, but if the obstruction has been entirely removed, the wound is bound to close. If the suprapubic wound has been widely opened, as some operators recommend, the healing will be much slower than it would be if the prostate had been removed through the already walled off sinus.

Before allowing the patient to leave the hospital it is well to pass sounds once to make sure there is a good free opening at the bladder outlet. A catheter should also be passed after voiding to make sure that the bladder is emptying itself. In a man who has had a chronically overdistended bladder, the bladder may not at once regain its tone and becomes less each day and finally disappears if the obstruction is gone. To summarize briefly:

1. Make absolutely sure that you are dealing with obstruction at the bladder outlet.
2. Having made sure of that, drain the bladder either by catheter or by suprapubic tube, until the kidneys have reached their highest possible efficiency. Fight renal insufficiency.
3. Remove the obstruction.
4. Fight renal insufficiency.

ENLARGED MESENTERIC LYMPH NODES

By Howard M. Clute, M.D., Boston.

The two cases of enlarged mesenteric nodes which form the basis of this report are from the practice of Dr. Frank H. Lahey, who has kindly permitted me to use them.

It is the experience of everyone who has operated upon children's abdomens to have found a few enlarged mesenteric nodes. Autopsy records show that enlarged mesenteric nodes are very common in tubercular children. Professor G. S. Woodhead found tubercular mesenteric nodes in 78.7% of his autopsies on tubercular children and in 11% these were the only lesions present. Dr. Coleman found them present in 66% of his tubercular autopsies, and Dr. Branson found this lesion alone present in 22% of his autopsies in his study of abdominal tuberculosis. Dr. Frank Berry of the Pathology Department of the Boston City Hospital informs me that enlarged mesenteric glands are extremely common in autopsies on children. They are seen much less regularly in autopsies on adults.

Human beings have two chief portals for the entry of infection to the body. The first is the respiratory tract and the second the alimentary canal. Infections in childhood are said to enter more often by the alimentary tract than through the respiratory channels, while in adults the reverse is found. This being so, it is not surprising to find the mesenteric nodes frequently enlarged in children, since they form the first barrier to the advance of an infection arising in the intestines.

That these lymph nodes may be the primary source of infection is believed by Corner and Babes, who were able to produce a primary tubercular lymphadenitis with no accompanying injury to the intestinal mucosa. In some of their cases, however, the lymphatics leading to the glands showed tubercular involvement.

The enlargement of these glands is generally of tubercular origin. A. Y. Jones has reported cases, however, in which no evidence of tuberculosis was found. In our two cases the macroscopic picture was that of tuberculosis and in the majority of instances this will be found to be the case.

Some of the enlarged glands in children are thought by many to be caused by the bovine bacillus of tuberculosis. Park estimates that 10% of tuberculosis in children under five years is of bovine origin. Fortunately, in the majority of cases of this infection, the local resistance offered by the nodes is sufficient to prevent the further incursion of the disease.

In adults, enlarged mesenteric glands are usually secondary to infection in the region of the appendix, gall bladder, or stomach, and are much less often tubercular.

Mesenteric lymph nodes react to infection in a manner exactly similar to lymph nodes in other situations in the body. With intestinal tract infections, there may be an acute hyperplastic inflammation with hyperemia, hemorrhage, and proliferation of the cells of the node. An acute exudative or suppurative inflammation is rare. Suppuration in the mesenteric nodes is almost unknown. A chronic inflammation with an increase in the connective tissue formation and a decrease in the lymphoid cells is much more often seen. In children the infection is usually tubercular in origin. In the early stages the nodes are soft and swollen and may be sprinkled with small tubercles. Later these tubercles coalesce and a cheesy degeneration occurs. Following this there may be a fibrous tissue increase with or without a deposit of calcium salts in the node. Nodes that have been the seat of a moderate infection may be quiet for some time and then undergo any of the above changes. There may be a peripheral hyperplastic inflammation and a group of nodes will thereby become glued together in a thick mass.

Enlarged mesenteric nodes may be situated anywhere in the mesentery. The ileocecal group, however, are most commonly involved. This fact Corner believes to be due to three factors: (1) The cecum is the next place after the stomach for food stasis. (2) There are many more bacteria here than elsewhere in the gastrointestinal tract. (3) The appendix is a frequent site of infection. Maylard says: "Because the ileocecal segment of gut is most often ulcerated, the ileocecal glands are most often enlarged."

Adhesions of gut or omentum to the glands may result in an obstruction to the gut. Thrombosis of the inferior mesenteric artery and vein has resulted from encroachment upon them of a single enlarged mesenteric gland. Calcification of these nodes occurs now and then, and may give rise to symptoms. Rupture, or extension of a caseous node into the peritoneal cavity may result in a general tubercular peritonitis. A generalized miliary tuberculosis may follow the rupture into a blood vessel of caseous nodes.

The symptoms of enlarged mesenteric glands vary with the pathological condition of the glands, with the age of the patient, and with the relation of other organs to the glands involved. In both children and adults they are one of the causes of abdominal pain which may give no hint as to its origin before an exploratory laparotomy is done. In the early stages of the disease in children, there is often a history remarkable for its vagueness, with little pointing to the real source of trouble. The child is anemic and listless, with loss of weight and appetite. Digestive disturbances like diarrhea or constipation are common. In one of Dr. Lahey's cases there was a history of obstinate constipation of long standing.

With an increase in the inflammatory process in the gland there are concomitant attacks of abdominal pain. The location of this pain shifts about noticeably, probably because of the ease with which the node moves with the mesentery. Fever with late vomiting may occur. The muscles over the nodes may be moderately rigid. When, as is frequently the case, the ileocecal glands are the ones involved, the picture may be that of a moderately acute inflammation of the appendix. Palpation of the enlarged ileocecal glands may add to the similarity of the case to appendicitis. The child is not markedly prostrated, however, and would not desire to stay in bed were it not for the pain.

If the pathological condition has advanced to abscess formation, all the symptoms will be more marked and more definitely localized. A tender mass, not movable, may be found in the abdomen, and there will be moderate muscle spasm over it. If a secondary pyogenic infection has occurred, a marked daily temperature rise may follow. In some of these cases a diagnosis of possible typhoid fever has been made from the daily fever, the prostration, diarrhea, and abdominal distention.

If the pathology has advanced to the stage of rupture of a caseous gland, the child may first be seen with the symptoms of a generalized peritonitis, as in Guthries' case quoted by Maylard.

Mesenteric glands of long standing may become calcified. In this condition, their symptoms plus their x-ray picture may lead to a diagnosis of renal or ureteral stone. The true diagnosis may be impossible until pyelography demonstrates the calcification to be outside the pelvis or ureter.

Late in the course of mesenteric gland pathology may occur acute abdominal lesions from accidents associated with the nodes. Thus acute intestinal obstruction may result from the adhesion of gut or omentum to a gland, as reported by Jones in three of his cases. Or there may occur an acute mesenteric thrombosis, as in Murray's case, in which the proximity of acutely inflamed mesenteric glands to the inferior mesenteric artery and vein resulted in a thrombus formation in both artery and vein with gangrene of the gut.

Branson writes that any movable tumor in the abdomen of a child, which is not fecal, is tubercular mesenteric nodes. The diagnosis will frequently not be made, however, until the case is sufficiently advanced to demand an exploratory laparotomy.

Recurrent attacks of abdominal pain in children, with fever, little or no vomiting, constipation, and loss of weight, should remind one of the possibility of tubercular mesenteric nodes.

The nodes may be palpated sometimes by combined rectal and abdominal examination. In each of Dr. Lahey's cases, the glands were readily palpable and moderately mobile. There is no leucocytosis with these cases as a rule, unless there is a secondary pyogenic infection.

The pain is rarely constant in its location, but shifts from point to point, so that an upper abdominal disease may be suspected one day and appendicitis the next. However, relatively few of these patients present themselves as acute surgical cases. They are more apt to go for months under medical treatment, with indifferent results, and only become surgical when it is evident that some more radical procedure is necessary.

Adequately treated, the prognosis in enlarged mesenteric nodes is good. No deaths and no recurrence of symptoms after the removal of the nodes have occurred in Dr. Lahey's two cases. Other surgeons report similar results. Fatal cases have occurred when the node was ruptured during its removal. Undoubtedly tubercular mesenteric nodes, untreated, offer a potential source for the further spread of the tubercular infection.

The principles governing the treatment of this condition are, in brief, the removal of the focus of disease and the care of the general health of the patient postoperatively. Conservative hygienic treatment may well be tried first in cases of this nature. Undoubtedly many people have, at some time, tuberculosis of the mesenteric glands which clears up with no appreciable trouble. This may happen in an acute case of the disease.

Conservative measures failing, however, operative removal is indicated. The difficulties encountered may vary from the mere shelling of the enlarged node from its mesenteric bed to the resection of gland, gut, and mesentery.

In acute obstructions from adhesions to a node, it may be wise to do no more than relieve the obstruction and not attempt to remove the enlarged gland. Drainage after the removal of the nodes is unnecessary, and because of the danger of leaving a tuberculous sinus, is better omitted.

CASE REPORTS.

Case 1. "J. T." Referred by Dr. C. G. Merrill, Marlboro. Age, 2½ years. Female. Breast fed one year. F. H.—Father died with pulmonary tuberculosis when baby was one year old. Remainder of family history negative. P. H.—Always a thin and delicate baby with a poor appetite. Adenoids were removed a year ago. Was quite ill with measles early this year. Since a few weeks old has had frequent attacks of abdominal pain occurring mostly at night. Never vomited. No fever. Bowels regular, as a rule. P. I.—A sudden attack of abdominal pain more severe than usual awoke the child. This pain persisted for three or four days and was accompanied by diarrhea. No vomiting. No fever. P. E.—In general, negative. The abdomen showed a movable mass just below the right hypochondrium. This mass was chiefly movable from side to side and was about four centimeters in diameter. It was hard, nodular, and not particularly tender.

June, 1919. Ether and operation by Dr. Frank H. Lahey. Right rectus incision. The ileum was found adherent to the transverse colon near the hepatic flexure and the ascending colon almost completely obstructed. There was a caseous lymph node in the ileocecal mesentery which was the basis for the condition. The ascending colon and part of the ileum with their mesenteries and the gland were resected and an end to side anastomosis between ileum and transverse colon performed. Macroscopic sections of the gland showed it to be the seat of tubercular infection.

A week after operation symptoms of intestinal obstruction appeared. The child's abdomen was again opened, and an adhesion at the site of operation freed where it was obstructing the gut. Convalescence thereafter was uneventful.

May, 1920. The child has gained steadily in weight and strength. Eats, sleeps, and feels well. Has had one attack of abdominal pain with marked constipation since her operation. Physical examination shows nothing remarkable.

Case 2. "V. M." Referred by Dr. H. A. Walker. Breast fed 16 months. F. H.—One paternal aunt and cousin died with pulmonary tuberculosis, but the child was never exposed to their infection. P. H.—Has been very constipated almost from birth. Had occasional attacks of abdominal pain with vomiting when quite young. Measles at four. For the past three or four years has had recurrent attacks of vague abdominal pain varying in severity. This pain usually started near the umbilicus and would shift to different areas from there. Sometimes has a little fever with the pain. Mother has long thought she felt lumps in the child's abdomen. No vomiting. P. I.—An unusually severe attack of pain began four days ago, centering chiefly about the umbilicus. Some vomiting. Temperature rose to 101.5°. Bowels moved with enemata. P. E.—A slight, poorly nourished girl with moderate anemia. General examination negative. Abdomen flat and soft. Just to the right and below the umbilicus is a mass visible and palpable. Movable in a radius of four or five centimeters. Some tenderness and muscle spasm over the mass.

Ether and operation, Dr. F. H. Lahey. Low right rectus incision. Appendix appears normal. In the mesentery at the ileocecal junction is a small mass of enlarged glands. These were dissected from the mesentery and removed. Macroscopic action showed the nodes to be tubercular. The mesentery was sutured, the appendix removed, and the abdomen closed. The convalescence was uneventful.

April, 1920. Now seven months after her operation, the child is in excellent condition, with no further difficulty than an occasional attack of constipation.

Bibliography.

Richardson, Maurice J.: Trans. Am. Surg. Assn., 1900, Vol. xviii, p. 326.
Jones, A. Y.: Am. Jour. Obstet., New York, 1917, Vol. lxxv, p. 417.
Zander: Munch. med. Woch., 1916, Vol. lxiii, p. 1491.
Newbolt, G. P.: Liverpool Med. Chir. Jour., 1910, p. 291; Brit. Med. Jour., Oct. 28, 1911, p. 1101.
Corner, E. M.: Lancet, Feb. 17, 1912, p. 426; Lancet, Dec. 23, 1905; Brit. Med. Jour., 1908, Vol. ii, p. 913.
Corner and Battle: Surg. of Dis. of the Appendix. London, 1911, p. 270.
Lockwood: St. Bartholomew's Hosp. Rep., Vol. xlv, 1909.
Thiemann: Archiv. f. klin. Chir., Jan. 23, 1910.
Schlossmann: Beiträge zür klin. Chir., Tubingen, April, 1912.
Maylard: Abdominal Tuberculosis, Philadelphia, 1908, p. 173.
Delafield and Prudden: Text-book of Pathology, p. 264. ix. Edition, William Wood & Co., p. 481.
Parker, D. W.: Boston Medical and Surgical Journal, Vol. clxxvii, No. 26.
Lund: Boston Medical and Surgical Journal, Vol. clxxvii, No. 26.
Smith, J. L.: Edinburgh Med. Jour., Vol. xiv, February, 1915, p. 112.
Murray, H. Leith: Brit. Jour. of Children's Diseases, Vol. xi, No. 127 p. 304.
Corner and Babes: "Les Bacteries." Vol. ii, p. 184. (Quoted by Maylard.)
Elliott, J. W.: Trans. Am. Surg. Assn., 1900, Vol. xviii, p. 264.

TREATMENT OF VASCULAR NAEVI WITH RADIUM.

By Douglass W. Montgomery, M.D., San Francisco,
and
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It was early discovered in the use of radium that it exerted an especially beneficial influence on certain types of naevi. This influence is most marked on the large, tuberous, vascular ones, in which the growth, if it is progressive, is not alone stopped, but the tumor also shrinks in size, and the startling red color disappears.

As in the use of a powerful agent like radium, the technique is of the first importance and as the greatest help we ourselves got during our novitiate was from the admirable reports issued by Pinch of the Radium Institute of London, we, in the hope of being similarly helpful to our colleagues, shall give our procedures.

On March 21, 1918, a baby girl of ten months was referred to us for a large, cavernous naevus 1.50 cm. in diameter and .50 cm. high, situated on the inner surface of the left upper arm. At birth it was a small red spot and had grown steadily ever since, and with especial acceleration within the past two months, so that either operation or control was felt to be imperative. Its surface was covered with vascular stellate red patches, and its substance felt like a loose bag.

We applied seventy-five mgms. of radium on the tumor for three and one-half hours, which not alone stopped the growth of the tumor, but secured a decided retraction. We, however, committed two mistakes. We screened the radium tubes employed with the silver and brass capsules alone, sent us for this purpose by the radium company from which we bought the radium. The capsules had become radioactive and, therefore, caustic, and we got a burn. We may here remark that where we did not burn the skin we have not got telangiectases from the radium. We now usually employ new coverings of lead, or keep the capsules, when not in use, apart from the radium. We also employed in this case one plaque which we screened with lead, but too lightly, and we did not intervene any cellulose screen either of wood, felt, paper, or gauze, which we now always employ. After the first burn, we avoided this accident in the following applications.

After five treatments, scattered through a period of eighteen months, the mother, in a letter recently received, says that the arm is almost like the other, except for a few superficial dilated capillaries, due, as already mentioned, to the imperfect technique.

A female infant, ten months of age, was brought to us February 12, 1919, with a very large naevus of the left cheek. There were no symptoms when she was born. When two weeks old, the lesion was the size of a mosquito bite, and had steadily grown till when we saw it, at ten months of age, it was a raised, deep red, cushion-like naevus with a rolled border and a sunken center. It measured three cm. in diameter and seven mm. in height, and caused the cheek to project out like a truncated cone. The center was, as before mentioned, sunken, and was cicatricial, the result of ulceration which had begun three months before, and had healed about four days before we saw the child. These spontaneous ulcerations occasionally occur on these very exuberant naevi and may cause alarming hemorrhages. When ulcerated, they may be readily mistaken for malignant disease. As a matter of fact, vascular naevi rarely become malignant; we have never seen one do so.

There was no evidence of naevus formation in the mucous membrane of the cheek within the mouth.

We applied a strong plaque of radium, 24.23 mgms., over the center, screened with lead 1.50 m.m., wood 2.00 mm., and one thickness of adhesive plaster, and on each side a 25 mgm. tube enclosed in its silver and brass tubes and screened besides with 1 mm. of lead, 2 mm. of wood, and one thickness of adhesive plaster. This was retained in place for five hours.

On March 27, a similar treatment was given, but with a less thickness of lead (0.40).

On May 27, 1919, the tumor was so reduced that only one radium tube could be used over it. This tube contained 25 mgms. of radium element and was enclosed in its silver capsule. Besides it was screened with lead 1.00 mm., wood 2 mm., and was retained in position for five hours.

On November 5, 1919, a similar radiation was given and the tumor was so reduced in size that we think that no further radiation will be given for a very long time, if at all.

A girl baby of eighteen months was referred to us July 9, 1919, for a bulbous, violet naevus occupying the whole nose tip. As above mentioned, these tuberous ones are particularly amenable to radium treatment, and the parents were told that marked improvement could be expected. From the nature of these cases, however, the skin never can become exactly like normal skin. The hyperplastic naevus blood vessels shrink away but the cutaneous texture never entirely resembles the beautiful, soft texture of the normal skin. The improvement is, however, striking, and by far and away better than under any other treatment.

A very strong radium plaque was employed and a very thick screen; the plaque was the size of a ten-cent piece and contained 24.23 mgms. of radium element. The screen was composed of 2 mm. of lead, 2 mm. of wood and 12 thicknesses of gauze, and one thickness of zinc oxide adhesive plaster. This was held in place for two and one-half hours.

On August 27, 1919, she received another treatment with the same plaque, but the lead screen was reduced to 1 mm. The wood and gauze and adhesive plaster, and the time were as in the previous treatment.

On November 4, 1919, another treatment was given with the same plaque. The screen consisted of brass 1.2 mm., wood 2 mm., gauze four thicknesses, sine oxide adhesive plaster one thickness, and the time was five hours.

On February 26, 1920, another treatment was given with the screening and the time as on the previous treatment, November 4, 1919.

The heavy screening was intended to eliminate the caustic alpha and beta rays, and even some of the coarser gamma rays, and therefore, was intended to avoid all burning, in which we were successful.

Attention is drawn to the fact that three months elapsed between each treatment. This was to allow time for the complete shrinking to take place which each treatment was capable of producing before the next treatment was begun. This we regard as important, and it may be that, in this case, more treatments may be given if it is surmised that there is still naevus tissue present.

In another case, a baby girl of sixteen months had a walnut sized angioma situated on the left side of the forehead at the hair line. She got a radiation, at first with 75 mgms. of radium, suitably screened, for two and one-half hours on July 17, 1919. Two months afterwards she got a radiation with 25 mgms. of radium for five hours, and again in three months a similar radiation for an equal space of time. The result is excellent.

The flat, red naevus, the naevus flammeus, is not nearly so amenable to treatment with radium as the large, tuberous ones; but still, even they, with care and patience, may be much improved.

With a patient, ten years of age, with such a naevus of the right side of the nose, extending to the inner canthus of the eye, and including the right upper eyelid, the right eyebrow, and extending up on the forehead, and a very small area beneath the right nostril, we employed the electrolytic needle, CO_2 snow, and radium. The best results were later obtained from radium.

THE SCREENING.

As can be seen by reading the above, the screening is of the greatest importance and must necessarily vary with the type of lesion treated, with the concentration of the radium preparation employed, and with the time this preparation is retained in place. One fundamental principle to bear in mind is that it is far better to err on the side of the screening too much. This precaution is especially necessary when a cosmetic result is wished for, as is so frequently the case in naevus.

In the first place there is a difference between screening and shielding. The shield is employed to protect the surrounding tissue. If the lesion is small, a hole for it is punched in a piece of thick lead, say 1 mm. thick. The hole should be a little larger than the lesion. This lead has to have either cellulose (paper, wood or gauze), or rubber between it and the skin to prevent the action of the secondary rays.

The surrounding tissues having been shielded, the screen is placed on the face of the radium applicator and then applied and firmly plastered down with adhesive plaster.

A favorite plaque with us is one made according to recommendations from Dr. Robert Abbe of New York. It is the size of a ten-cent piece. In ordering it from the radium firm from which it was purchased it was requested to include in the plaque all the radium possible in this sized glaze. Our plaque contains nearly 25 mgms.

We screen this with 1 mm. of lead, 2 mm. of wood, 12 thicknesses of gauze and one thickness of the zinc oxide adhesive plaster employed in binding this all together. This may be retained in place for five hours or longer without fear of burning, and the results show that a sufficient radiation goes through this material to act efficiently on the hyperplastic blood vessels of the tumor.

THE SPIDER NAEVUS.

Usually included among the vascular naevi, but not at all in the same pathological class, is the spider naevus. It consists of a bright red, central point, with dilated capillaries radiating out from it. This is not at all amenable to radium treatment as it does not contain any naevus tissue or hyperplastic naevus blood vessels to be acted upon by the gamma rays.

The dilated central point and the radiating capillaries are easily obliterated with the electrolytic needle.

MEDICAL JUDGMENTS.

By H. W. Marshall, M.D., Boston.

IDEAS which it is desired to call attention to can be introduced most quickly and conveniently from an actual case.

A middle-aged man fell backward on the ground and nine years later slipped again and sat down heavily. He hurt the lumbar region of his spine moderately at each injury. He recovered completely after the first accident in a few months, and after the second one x-rays of the spine revealed numerous osteoarthritic bony changes, one bony overgrowth being located at insertions of ligaments at the tip of one of the posterior vertebral spinous processes.

Its appearance led one doctor to believe there had been a slight fracture at this point, and he advised insertion of a bone graft into the spine taken from the tibia, but this was not done. A second physician advised hydrotherapeutic baths. There was no appreciable benefit from the first one and no more were taken. A third physician applied a plaster jacket, which became unbearable in a few days and it was removed. A dentist extracted the patient's badly defective teeth, more than twenty in all. Another physician prescribed stomach and rectal lavage, diet regulations, more complete rest for extreme nervous fatigue and irritability, medicines, also a removable back brace which was worn for local support as much as nervous irritability permitted. The patient slowly and completely recovered under the latter treatment in seven months' time.

If the first physician's advice had been accepted, an operation performed, digestive functions regulated, and teeth extracted, there would have been complete recovery undoubtedly and the result, without doubt, would have been attributed mainly to the surgical measures. The last mentioned physician's care shows, however, that an operation was unnecessary in this instance. The dentist can assert yet that removal of the bad infective focus in the mouth was the most important feature which turned the patient's course toward recovery. The dentist's services were insisted on first by the last physician, under whose direction the patient's recovery occurred, and the latter doctor brought together the combination of different measures which promptly turned a progressively downward course into one of recovery with maintenance of steady improvement until health was restored. The immediate effects observed and subsequent course of the patient are sufficiently convincing perhaps to warrant belief that medical care was of undoubted, marked benefit in this instance.

A series of questions can be proposed. Why shouldn't surgeons be encouraged to operate on all such cases provided patients improve under their care? Why shouldn't it have been advisable in the cited case to have had a more complete examination in order to be prepared for future possible emergencies? What harm is there in having members of any of the different medical specialties advise their special methods as long as some improvements follow in patients' conditions? What constitutes the rights of patients in matters of their own treatments? Should they insist on simplest, quickest and least expensive methods? Or should they compromise on a basis that promotes medical science most rapidly, supports the medical profession most comfortably, and will be of maximum benefit to future patients, provided present sufferers derive a little benefit?

These sides to each medical problem exist unavoidably, and with advancement of industrial medicine more emphasis is being laid on simplicity, rapidity, and low costs of treatments for those disabled at present.

It seems to the writer that the medical profession has the task ahead of adding greatly increased judicial activities to its other departments, judicial activities that include revisions of existing medical practices and regulations of medical fees.

The principal harm in letting different specialties expand in unrestrained fashion lies in the danger of decreasing benefits to patients as efforts are made to stretch the scope of each special department unduly for the benefit of practitioners, or medical science, or the welfares of prospective patients in the future. Evidences of distrust already are seen on the part of insurance companies whose interests coincide with those of patients to the extent of desiring quickest, simplest, and least expensive methods. Benefits of numerous expensive surgical operations naturally have been the first to undergo closer scrutiny and most extreme surgical ideas to be condemned. Public opinion will furnish natural checks finally to all excessive special developments if the latter are not wisely restrained and controlled by the medical profession itself?

Nothing need be said about regulations of medical fees, which are being taken care of fairly satisfactorily by local medical societies; but not all doctors in Massachusetts appreciate fully the judicial functions of the Massachusetts Industrial Accident Board, and its medical adviser. Insurance companies naturally tend to think scales of industrial medical prices are too liberal, practitioners on the other hand sometimes consider the same prices too low. Many are inclined to be dissatisfied with necessary compromises. Great commendation, however, is due Dr. Francis Donoghue, medical representative of the Accident Board in helping to establish a much fairer schedule than would exist without his efforts. A sum of more than one million dollars paid last year for medical and hospital services indicates a higher scale of payments than before the present law went into effect.

It is easy to express the opinion that revisions in medical practices are desirable, but the pertinent question can be asked, in what practical ways such desired ends are likely to be secured?

Examinations of collected clinical data reveal the fact that much of it consists of one-sided tabulations and presentations of advantages of special methods. And, because real progress demands impartial judgments of all advantages and disadvantages of any topic, one logical procedure would consist in going over the same ground that has been already covered, emphasizing and judging all unfavorable features impartially along with recognized advantages. Happily this disagreeable job is rendered unnecessary in part through the rapid loss in obscurity of innumerable ideas and past endeavors as new ones cause the older ones to be forgotten.

It would be feasible from another point of view to collect lists of patients who have had recommended special treatments, and who, refusing, have recovered quickly and satisfactorily, showing that the recommended measures were not necessary. Such cases are extremely easy to find, and strongly adverse statistics could be compiled readily by assembling sufficiently large numbers of cases.

In this manner it might be possible to swing the balance of opinion unfairly against valuable special methods of which surgery at present is perhaps the most important. Adverse data might spread the opinion widely that surgical statistics are unwarrantably optimistic, and that many cases classified as successes properly should be considered comparatively harmless, unnecessary, expensive procedures.

Exact percentages of unnecessary operations or other special treatments could not be estimated from such one-sided tabulations, nor could the far-reaching merits of surgery be obscured entirely although minimized by such deflation methods. Real merits, on the contrary, would stand out with greater prominence, presumably.

Collections of purely adverse statistics would call forth strong protest from specialists whose particular fields were invaded. Alarmists would declare that their welfares were being assailed, whereas the trimming away of superfluous ideas and methods never has obstructed medical progress nor welfares of doctors seriously yet, but instead always tends to direct more energy with increased force into more profitable channels and has been constructive rather than destructive in its character.

Dr. Richard C. Cabot of Boston has compiled interesting comparisons in a very large series of cases between clinical diagnoses made during life and autopsy findings on the same patients subsequently. He found among a wide variety of diseases there were variations in correct clinical diagnoses ranging from 95 per cent. in diabetes mellitus down to 16 per cent. in acute nephritis, averaging about 50 per cent. of successes for the whole series.

This piece of work offers a basis for interesting speculations. If it is assumed that similar percentages of errors in diagnosis exist in non-fatal cases, and if some allowance is made for unskillful treatment,—and certainly there are many opportunities for variable skill in chains of complicated therapeutic procedures so often needed,—if it is assumed that there are 50 per cent. of good treatments and 50 per cent. of bad ones, then efficiency of combined diagnosis and treatment would average 25 per cent., while normal physiological processes of repair would be responsible mainly for recoveries in 75 per cent. of cases.

If this low estimate represents the truth, although it can neither be proved nor disproved, then increased judicial powers would appear to be more important now even than enthusiasm, energy, and high purposes in developing new methods and discovering new scientific facts. High ideals are very essential parts of best medical practice and high appreciations of medical accomplishments are most commendable, yet there are few advantages in self-deception, and consequently it is well to realize that medical progress would make more rapid strides if there were better balanced relationships between different medical departments.

If the medical profession were an enormous business corporation its directors undoubtedly would curtail collections of additional new material now until the tremendous stock on hand has been sorted, classified, and utilized to more complete advantages. There would be transference of workers from one department to other departments, if possible, where they needed more, and until a better balance had been reëstablished. The medical profession, however, has no such efficiently organized set of important general managers whose duty it is to order such changes in a manner comparable to business methods.

If attempts were made to reduce inflated values of all medical care, evidence could be collected from among persons of Christian Science and allied beliefs who have recovered health under the influence of psychotherapy alone. A strong array of evidence could be mustered, evidence that has been sufficient to prove to a great many persons that all purposeful medical treatment is unnecessary. It has overwhelmed them to such a degree that they forget entirely the numberless undoubted benefits of established medical practice, and they belong in the same group as all extreme specialists who see only unbounded possibilities within their own departments.

Enough has been said, perhaps, to indicate the urgent increasing need for deliberate comparisons and better judgments, but matters of interest also are found in the continual attempts which are being made to improve medical efficiency in various ways.

Diagnoses and treatments by groups of specialists have been strongly advocated to meet rapidly growing volumes of medical knowledge, and it is claimed that a single physician cannot handle adequately all sides of problems which may arise. Undoubtedly great benefits have been derived already from group diagnosis and treatment.

It is proper, however, to point out the limitations of this method, the increased dangers of too much treatment, diminutions of close personal touch between patients and their doctors, and possibilities of increased harm as well as benefits when there is lack of harmony among ideas of specialists, as not infrequently happens. The efficiency of groups, as of individuals, ranges from one hundred per cent. down to zero and below zero. So that a medical group conceivably can do more harm at times than one of its members alone can do.

Extensions of medical examinations to healthy persons for the purpose of preventing developments as far as possible of their latent abnormal tendencies should be mentioned among other efforts being made toward increased medical efficiency, as well as ideas of wholesale concentrations of hospitals, improved care for numberless industrial cases and health insurance for the masses. All should be encouraged undoubtedly for sake of progress, but all should be submitted to most searching inspections for all disadvantages as well as for merits before acceptance, if greatest efficiency alone is sought. Some of the schemes being promoted for the good of patients seem to promise maximum benefits for their originators with rather meagre or expensive advantages for those for whom the plans are proposed.

Isn't it an appropriate time now when complex methods are tending to become more complex and elaborate, when organized medical practices tend to overshadow former simpler methods, to make revisions that will retain as great simplicity as possible, and to inquire what patients want themselves and what they are entitled to have?

Patients cling to personal friendships and faith in individual physicians although there are wonderful hospitals and some very effective organizations, because they prefer to be treated thoughtfully and deliberately as individuals instead of hurriedly as units simply in a big impersonal system.

It is interesting to note that many mature general practitioners keep this personal touch, retaining their broad conceptions and good common sense, and yet manage to increase their skill along single lines in which they are especially interested. On the other hand, many mature specialists manage to retain their general understandings of patients' problems while maintaining special skill along certain lines of treatment, so that the majority of patients still are handled on the scheme of one man's responsibility.

This appears to be a very desirable tendency that is not incompatible necessarily with improved organization of general character, and it tends to avoid the dangers arising from division of responsibilities in large groups such as represented in some hospital care. Each medical problem is found to be more and more an individual one the more closely it is studied; and if patients' interests are to remain of foremost importance there will be renewed efforts made to secure greatest simplicity, rapidity, and reasonable costs combined with one man responsibility, retention of close personal relations between patient and doctor, and small group opinions of variable nature, depending on the individual peculiarities of the case. Responsibilities of patients will remain in hands of single physicians who retain their capacities along with their few associates both for good general and for some good special judgments

As undesirable tendencies, excessive personal ambitions of physicians, the irresistible lure of medical science, theoretical possibilities of enormous benefits for future patients or the community which sometimes never materialize, are successfully resisted and rights of patients now suffering are fully respected, there is increased likelihood in the long run for maximum benefits also for all other phases of medical work.

There are limitations to all medical endeavors in spite of wonderful advances in every direction, and it does not appear that increasingly complicated tasks are warranted now which are based mainly on enthusiasm and good motives. Promised results of treatment already have become greater than fulfillments actually are frequently. Judgments have to be improved to far greater degrees yet before many projects can be successfully carried out, and in this time of readjustments when all are groping amid the confusing wealth of ideas for profitable future lines of endeavor it should be kept in mind and emphasized that judicial branches of medicine offer favorable opportunities for improvement.

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Book Reviews.

Gymnastic Treatment for Joint and Muscle Disabilities. By Brevet-Col. H. E. Deane, R.A.M.C., with Prefaces by Temp. Col. A. Carless and Brevet Lieut.-Col. F. W. Mott, F.R.S. London: Henry Frowde and Hodder & Stoughton, Oxford University Press, Warwick Square, E.C. 1918.

The value of gymnastic treatment for joint and muscle disabilities has been successfully tested by Colonel Deane at the Craydon War Hospital. This volume, *Gymnastic Treatment for Joint and Muscle Disabilities,* explains the principles of this treatment and points out why it is a more effective method than massage, radiant heat, or mechanical contrivances. One of the most vital factors in the reparative process is volition. Massage fails to bring into action a man's volition and motor centers; simple gymnastic exercises, however, require the coöperation of both mind and body and stimulate the patient toward increased effort. The gymnastic method is of further value in allowing the full use of associated movements; a man's sound limbs can be utilized in recovering the function of an injured one. A skipping-rope, Indian clubs, dumb-bells, a beam, a slanting ladder, parallel bars, a sparred plank, wall bars, ropes, and a nautical wheel make up enough apparatus for cultivating any movement. The use of each of these devices is described in this book. The author emphasizes the importance of the medical officer knowing thoroughly and being able to demonstrate all the exercises which he expects the men to do. The fact that this gymnastic treatment has benefited many men should stimulate members of the profession to investigate and follow Colonel Deane's methods of treatment.

Clinical Medicine for Nurses. By Paul H. Ringer, A.B., M.D. Philadelphia: F. A. Davis Company, 1918.

This volume, *Clinical Medicine for Nurses,* offers to nurses a valuable description of the diseases which they are most frequently called upon to observe and interpret. The author emphasizes particularly the symptoms of various diseases and discusses their meaning, complications, and detection. The bacteriology and pathology of diseases are briefly presented, with a more detailed consideration of methods of treatment. Fever, heart diseases, kidney disturbances, pneumonia, tuberculosis, scarlet fever, diphtheria, anemia, and goitre, are some of the diseases discussed. This book covers its subject with more completeness than the ordinary textbook for nurses and eliminates the minute details which render textbooks on medicine too complicated for the pupil nurse. Many nurses who have long felt the need of a book of this character will appreciate the helpfulness of this volume.

Psychogymnastics and Society Drama. By Delbert M. Staley, A.M., Ph.D., and Helen C. Culver. Boston: Richard G. Badger. 1918.

Psychogymnastics and Society Drama is interesting and unique. Its subject is self-development and expression. The first part of the book deals with exercises denoting intelligence and explains how one may cultivate, by concentrated attention to the most trivial of exercises that intangible quality, personality. The chief importance of this half of the book lies in its emphasis on the physiological significance of correct posture. The second part considers the relation of the individual to the drama of life and is of some psychological value. The book contains most detailed exercises which, if conscientiously followed, it is claimed by the author will elevate the individual to a new intellectual status, and will enable him so to adjust himself that he is in complete harmony with the universe and able to meet life's vicissitudes with an unsurmountable calm and poise.

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PUBLIC HEALTH IN LONDON.

The report of the London County medical officer of health for the year 1919 is of particular interest inasmuch as it deals with the period of transition in London from war conditions to conditions practically normal. The estimated population of London in 1919 was 4,540,062. Although the housing problem would indicate that this figure represents an increased population, it is probably true that the scarcity of housing accommodation is due to a diminution of building and to an increase in marriages rather than to any appreciable increase in the total population. The estimated birth-rate for 1919 was 18.2 per 1,000, an increase of 2.2 over that of 1918. The death rate was 13.6, or 5.6 less than that of 1918, in spite of the 5,000 deaths attributed to influenza during 1919.

Infectious diseases were still prevalent in 1919 to a degree below the average, although the records for that year show higher figures than during the preceding three years. A number of small-pox cases were reported; there were more cases of diphtheria than since 1902, and scarlet fever continued to increase during 1919, as it has since 1917. It is interesting to notice that although prior to demobilization over 400,000 persons from all parts of Europe passed through London, the prediction made in the annual report for 1914 was realized and the disease showed a further decline. Among the soldiers, the diminution in mortality may be ascribed in large part to preventive inoculation; improvement in water supplies and a more vigilant inspection of fish and shell fish supplies are believed to be factors in the improvement among the civilian population. The report states that the prevalence of tuberculosis, influenza, cerebrospinal fever, poliomyelitis, and polioencephalitis (including encephalitis lethargica) indicates that there is a need for a "truer and more comprehensive epidemiology." Since 1914 one-half of the net cost of the borough council tuberculosis dispensaries has been met by the Council. An examination of thirty-three dispensaries in the London area has shown that each year the dispensaries deal with only one-half of the new cases of pulmonary tuberculosis and with only one-third of the non-pulmonary cases. More extensive home visiting by dispensary doctors and nurses has been recommended; it is desirable also that the dispensary work be coördinated more completely with that of the borough public health departments. There is need for about one hundred new beds for cases requiring observation and treatment in large general hospitals. Moderately advanced and chronic progressive cases present one of the most difficult problems; it has been recommended that for these patients there be provided (1) a hygienic home; (2) occupation under medical supervision and suitable to the physical needs of the patient; and (3) measures whereby the savings of tuberculosis patients may be increased during periods of institutional treatment. For advanced cases 250 beds are needed, and for cases of surgical tuberculosis in adults there is also very inadequate accommodation.

It is unfortunate that because of the scarcity of physicians the medical assistance furnished by midwives increased nearly one hundred per cent. during 1919. Approximately 44,000, or 54%, of the total number of births in London, were attended by midwives. Deaths from pu erperal fever were 68 among 141 cases notified by medical practitioners, 35 among 112 cases notified by certified midwives, and 47 among 81 other cases. Notification was made of 856 cases of ophthalmia neonatorum apart from the practice of midwives. Arrangements have been made for the in-patient treatment at St. Margaret's Hospital, St. Pancras, of infants suffering from this disease. Hospital clinics for venereal disease reported 20,908 new patients in 1919, compared with 12,538 in 1918. It is hoped that during the present year in-patient treatment may be provided for infected pregnant women and for female children suffering from gonorrhoea.

The medical inspection of school children showed that in contrast with the steady improvement in nutrition during the war, some deterioration in that respect was observed in 1919. The percentage of undernourished children in 1919 was 6.1; in 1918 it was 5.5 per cent. Malnutrition was noticed particularly among entrants, of whom 4.7 of the boys and 4.4 per cent. of the girls were poorly nourished in 1918, as compared with 6.1 per cent. of boys and 5.7 per cent. of girls in 1919. Children with serious malnutrition increased from 0.5 per cent. to one per cent. during the year. A comparison of children examined in 1919 at the age of twelve years with the same children at eight years examined in 1915 showed a marked improvement in cleanliness and nutrition, and in the teeth and the condition of the throat and ears, but the heart and vision showed deterioration and among the girls there was an increase in the amount of deformity. It has been estimated that about 30,000 children in elementary schools require open-air education for varying periods. By the addition of two open-air schools and one tuberculosis open-air school, provision has been made for 4,000 children altogether. It is hoped that 8,000 may be cared for in open-air classes in parks and playgrounds, and that 4,000 younger children may be benefited by nursery schools; periods at holiday schools and camps may suffice for the remaining 14,000 older children.

The statistics furnished by the report for the year 1919 show that in spite of the difficulties attending the war reconstruction period, London has maintained her position as the healthiest large city in the world.

PUBLIC HEALTH COMMITTEE LECTURES.

The Public Health Committee of the Massachusetts Medical Society was able in the past two years to arrange with well-known specialists in various medical fields to give talks at meetings of the District Medical Societies, on subjects of interest and importance to all practitioners. It is a pleasure to announce that a similar arrangement has been made this year and that the gentlemen named below are willing, without expense to the District Society, to give occasional talks of thirty or forty minutes, on subjects relating to the promotion of public health, and to extend opportunity for questions and discussion.

The district officers writing to ask for these lectures will kindly designate not only the name of the desired speaker, but the topic, the place and the hour of meeting, thus eliminating unnecessary correspondence.

Dr. J. B. Bill, Doctor of Public Health. Specialty, Preventive Medicine.

Dr. Frank Dunbar, Bacteriologist. Instructor in Bacteriology and Pathology, Tufts College Medical School.

Dr. Walter E. Fernald, Superintendent Mass. School for the Feeble-Minded. Specialty, Mental Hygiene.

Dr. Timothy Leary, Professor of Pathology, Tufts College Medical School. Medical Examiner Suffolk County.

Dr. Edwin H. Place, Physician-in-Chief, South Department, Boston City Hospital. Specialty, Contagious Diseases.

Dr. William T. Sedgwick, Department of Biology and Public Health, Massachusetts Institute of Technology.

Dr. C. Morton Smith, Chief of Department of Syphilis, Massachusetts General Hospital. Specialty, Syphilis.

Dr. George Gilbert Smith, Associate in Genito-Urinary Department, Harvard Medical School. Specialty, Genito-Urinary Diseases.

Dr. Lesley H. Spooner, Member of Staff, Out-Patient Department Massachusetts General Hospital. Specialty, Specific Diagnosis and Treatment of Pneumonia.

Dr. Howard A. Streeter, Director Subdivision of Venereal Diseases, Massachusetts Department of Health. Dr. Streeter gives a lecture with screen and films.

Dr. William C. Woodward, Health Commissioner, Boston.

Dr. George H. Wright, Lecturer on Dental Hygiene, Harvard Dental School. Specialty, Dental Surgery.

Secretaries of District Societies desiring to arrange for speakers from this list should communicate with the Secretary of the Committee, Dr. Annie Lee Hamilton, 141 Newbury Street, Boston 17, Mass.

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MEDICAL NOTES.

Chair in Bronchoscopy and Oesophagoscopy.—The first medical chair in bronchoscopy and oesophagoscopy has been established in the Graduate School of Medicine of the University of Pennsylvania. The work will be conducted under the direction of Dr. Chevalier Jackson of Philadelphia. The new course is the result of the desire of many physicians and surgeons to be given instruction in the methods used by Dr. Jackson in the removal of foreign bodies from the lungs and air and food passages. Dr. Jackson received his medical education at Jefferson Medical College. He has been interested particularly in endoscopy and similar subjects, from the beginning of his medical career. Dr. Jackson has invented a number of appliances, including the electrically lighted "Jackson laryngoscope" and the distally lighted "Jackson bronchoscope and gastroscope," which have opened new fields in the removal of foreign bodies lodged in the bronchial tubes and revolutionized the treatment of these cases, reducing the mortality from eighty-five to less than two per cent. In addition to conducting the new course, Dr. Jackson will continue his work at Jefferson Medical College, where he is professor of laryngology.

Outbreak of the Plague among Turkish Troops.—A report dated September 1 announces that four cases of plague have been discovered in the Turkish government barracks at Scutari, across the Bosphorous from Constantinople. The allied sanitary commission has forbidden the landing of boats.

Destitution of Physicians in Vienna.—Our attention has been called to the destitution of physicians in Vienna. In the necessity of combating the increased mortality and alleviating the many ills of the undernourished population, their work must be continued at all events; yet they find it impossible to provide their children with food on the scanty government ration supplemented by their pitifully meager incomes. The American Relief Committee for Sufferers in Austria, 261 Madison Avenue, New York, has created a special fund for the relief of destitute physicians and surgeons in Vienna. Contributions may be made to Alvin W. Krech, Equitable Trust Company, 37 Wall Street, New York City.

Group Consultation Clinic at Goshen, New York.—The New York State Department of Health announced on August 28 that the success of the Group Consultation Clinic held at Goshen, New York, on three days of the preceding week by three hundred and fourteen physicians, was so notable that clinics of similar nature are to be planned immediately for other sections of the State. In speaking of the work of the clinic, Dr. E. C. Body is reported to have made the following statements:

"The Group Consultation Clinic was established by the State Department of Health in conjunction with the State Department of Education, the State Hospital Commission, the State Commission for Feeble-Minded, the State Charities Aid and the American Red Cross, with the object of providing such modern medical facilities for the country doctor as would enable him to reach a correct diagnosis in difficult and obscure cases. At the present time a rural physician who has a difficult or obscure case must send his patient to a large city to visit specialist after specialist, and at a great expense, before a diagnosis can be made. But the Group Consultation Clinic as conducted by the State Health Department furnishes the solution of the problem because all these facilities are really brought together to the physician for his use.

"The conduct of the clinic is as follows: Patients are referred to the clinic by their attending physician. After a careful history of the case the patient is referred to the proper consultant for examination. If the consultant thinks that additional information is necessary before a diagnosis is made, such a laboratory examination or an x-ray examination or another examination by another consultant, the case is referred to that department.

"When the examinations are completed the consultant reviews all the evidence, makes the diagnosis and any recommendations concerning the future course of procedure for the patient. All this information is then forwarded to the patient's attending physician. It is obvious that under this arrangement the relations between the patient and family doctor are not altered in any degree, and that the clinic is conducted along ethical lines."

INTERNATIONAL ASSOCIATION OF "PNEUMOTHORAX ARTIFICIALIS."—The International Association of "Pneumothorax Artificialis," of which the work was paralyzed during the long war, desires to resume its activity by inviting all former members of the Association to renew their subscription and all other physicians interested in artificial pneumothorax to send their names and addresses to Prof. Umberto Carpi, Lugano, Switzerland, and to become members.

The purpose of the Association is to spread all practical and scientific information concerning artificial pneumothorax. Although induced pneumothorax for therapeutic purposes has become remarkably prevalent ("*Bien que la diffusion de la thérapie du pneumothorax soit devenue trèe remarquable*"), it has remained a therapeutic procedure applied only by physicians specially trained and experienced in this operation. For the convenience of the patients who may be obliged to change their residences, to know the names and addresses of physicians who practise artificial pneumothorax is of great value, in order that the patient may continue the treatment by periodic refilling. A complete list of physicians practising artificial pneumothorax will be published with the scientific journal known as *Pneumothorax Therapeutique* for 1920-1921, edited by Carlo Forlanini. This list will be sent to all the members and to the most important medical societies, medical academies, and similar institutions of the different countries. In the journal will be enumerated and discussed all the world's literature on pneumothorax. The association will continue its labors under the policy indicated by the illustrious master and creator of artificial pneumothorax therapy. As soon as the finances of the society will permit the renewal of the publication, the editor will put himself in communication with the editors of such medical journals of other countries as are publishing articles on artificial pneumothorax. For the present these are *Die Sonderhefte des Tuberkulose Centralblattes ueber Lungenkollapstherapie* and the collected monographs in the journal *La Tuberculosi*, which appears in Rome. We trust that our very excellent *American Review of Tuberculosis*, edited by Prof. Allen K. Krause of Baltimore, will be included in this list.

The subscription price of 5 francs should be addressed to the General Secretary, Prof. U. Carpi, Lugano. The subscriber is entitled to receive the journal with the list of names. Those who desire to receive the monographs of the journals indicated should make a request for them to the General Secretary, who also has an international exchange office for all publications appertaining to artificial pneumothorax. Summaries in English, French, and German, on any topic relating to artificial pneumothorax will be gratefully received and published.

NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS.—The thirtieth annual session of the New York and New England Association of Railway Surgeons will be held at Hotel McAlpin, New York City, on October 19, 1920. The following addresses will be included in the program:

The Application of War Surgery to Civil Practice. Dr. J. M. Wainwright, Scranton, Pa.

Efficiency in Mechanical Treatment of Fractures, illustrated. Dr. George W. Hawley, Bridgeport, Conn.

The Conservation of Function in the Treatment of Fractures of the Femur, illustrated. Dr. Joseph A. Blake, New York City.

Workmen's Compensation—The Surgeon's Fee—and the Carrying Insurance Company. Dr. George Chaffee, Binghampton, N. Y.

President's Address. Dr. William B. Coley, New York City.

An Address. Mr. A. H. Smith, President, New York Central Lines.

Address in Surgery: Special Points in Surgery of the Gall-bladder and Ducts. Dr. George W. Crile, Cleveland, Ohio.

Osteoplastic Surgery, illustrated. Dr. Fred H. Albee, New York City.

How Can the Railway Surgeon Assist the Railway Claim Department?, Mr. W. S. Throop, Chief Claims Attorney, Erie Lines, New York City. Discussion opened by Dr. George K. Meynen, Jamaica, N. Y.

Fraudulent Claims. Mr. H. H. Downs, Chief Claims Attorney, New York Central Lines, New York City. Discussion opened by Dr. Edgar Vander Veer, Albany, N. Y.

Clinics will be held on October 20 and 21.

BOSTON AND MASSACHUSETTS.

WEEK'S DEATH RATE IN BOSTON.—During the week ending September 18, 1920, the number of deaths reported was 178 against 147 last year, with a rate of 12.41 against 9.62 last year. There were 26 deaths under one year of age against 27 last year.

The number of cases of principal reportable diseases were: Diphtheria, 31; scarlet fever, 21; measles, 5; whooping cough, 19; typhoid fever, 9; tuberculosis, 38.

Included in the above were the following cases of non-residents: Diphtheria, 3; scarlet fever, 3; whooping cough, 1; typhoid fever, 2; tuberculosis, 1.

Total deaths from these diseases were: Whooping cough, 2; typhoid fever, 1; tuberculosis, 19.

Infantile paralysis cases, 30—9 non-residents included; deaths, 4.—2 non-residents included.

CONSULTATION CLINICS IN EARLY PULMONARY TUBERCULOSIS.—The State Department of Public Health announces to the physicians of the Commonwealth a series of Consultation Clinics in Early Pulmonary Tuberculosis. These clinics will be conducted by the Medical Staff of the state sanatoria, and opportunities will be afforded the family physician to obtain, without fee, expert diagnosis in this type of pulmonary disease.

Patients applying to these clinics must be accompanied by the family physician, or present a letter from him giving the history of the case and requesting an opinion.

These clinics were to begin in September, 1920. Further details are given in the accompanying table:

Worcester, Municipal Tuberculosis Dispensary, Belmont Hospital, first Wednesday of each month, 2 to 5 P.M., Medical Staff of the Rutland State Sanatorium.

Gardner, Municipal Tuberculosis Dispensary, Municipal Building, 50 Glazier Street, second Wednesday of each month, 2 to 5 P.M., Medical Staff of the Rutland State Sanatorium.

Fitchburg, Municipal Tuberculosis Dispensary, 366 Main Street, third Wdnesday of each month, 2 to 5 P.M., Medical Staff of the Rutland State Sanatorium.

Clinton, Municipal Tuberculosis Dispensary, Municipal Building, fourth Wednedsay of each month, 2 to 5 P.M., Medical Staff of the Rutland State Sanatorium.

Lowell Municipal Tuberculosis Dispensary, City Hall, first Wednesday of each month, 2 to 5 P.M., Medical Staff of the North Reading State Sanatorium.

Lawrence, Municipal Tuberculosis Dispensary, 31 Jackson Street, second Wednesday in each month, 2 to 5 P.M., Medical Staff of the North Reading State Sanatorium.

Haverhill, Municipal Tuberculosis Dispensary, City Hall, third Wednesday of each month, 2 to 5 P.M., Medical Staff of the North Reading State Sanatorium.

Woburn, Municipal Tuberculosis Dispensary, Board of Health rooms, fourth Wednesday of each month, 2 to 5 P.M., Medical Staff of the North Reading State Sanatorium.

Taunton, Municipal Tuberculosis Dispensary, City Hall, first Wednesday of each month, Medical Staff of the Lakeville State Sanatorium.

Brockton, Municipal Tuberculosis Dispensary, Board of Health office, City Hall, second Wednesday of each month, 2 to 5 P.M., Medical Staff of the Lakeville State Sanatorium.

Fall River, Municipal Tuberculosis Dispensary, Purchase Street, third Wednesday of each month, 2 to 5 P.M., Medical Staff of the Westfield State Sanatorium.

Plymouth, Municipal Tuberculosis Dispensary, Room G, Governor Bradford Building, Town Square, fourth Wednesday of each month, 2 to 5 P.M., Medical Staff of the Lakeville State Sanatorium.

Pittsfield, Municipal Tuberculosis Dispensary, first Wednesday of each month, 2 to 5 P.M., Medical Staff of the Westfield State Sanatorium.

Springfield, Municipal Tuberculosis Dispensary, 137½ State Street, second Wednesday of each month, 2 to 5 P.M., Medical Staff of the Westfield State Sanatorium.

Holyoke, Municipal Tuberculosis Dispensary, City Hall Annex, Room 412, third Wednesday of each month, 2 to 5 P.M., Medical Staff of the Westfield State Sanatorium.

Adams, Municipal Tuberculosis Dispensary, Greylock Bank Building, fourth Wednesday of each month, 2 to 5 P.M., Medical Staff of the Westfield State Sanatorium.

Facilities for consultation are provided at each State Sanatorium for every day of the week (Saturdays, Sundays, and holidays excepted) between the hours of 2 and 5 o'clock.

Attendance at these clinics is not restricted to the inhabitants of the cities named. Physicians are invited to make use of any clinic, it being inferred that each will select the one nearest his home city or town.

The Department of Public Health earnestly pleads for the coöperation of the family physician in this Consultation Service.

Obituary.

GEORGE FRANKLIN EAMES, M.D.

DR. GEORGE FRANKLIN EAMES, of Boston, died at Scarboro Beach, Me., September 5, 1920. Dr. Eames was born at Swanville, Me., in 1854, and was the son of Franklin P. Eames of Belfast, Me. He studied medicine first at Jefferson Medical College, graduating in 1882, and subsequently at the University of Pennsylvania Dental College. He began his practice in Philadelphia, then moved to Bucksport, Me., and later established his practice at Beverly and Boston.

Dr. Eames was a member of the Massachusetts Dental Society, of which he had been president; the National Dental Society, the Massachusetts Medical Society, honorary member of the Maine Dental Society, and chairman of the Section on Stomatology of the American Medical Association. At one time he was professor in the old Boston Dental College, which was subsequently merged with the Tufts College Dental School. He was a member of the Boston Art Club, and as an expert tennis player he had figured in many tournaments.

and was the possessor of a number of trophies.

He was a frequent contributor to the magazines, was the author of several books dealing with dental subjects, and had read many papers before societies.

His immediate survivors are his widow, who was Miss Alice Foster of Beverly; and one son, Dr. Haller B. Eames of Boston, who since 1917 has been a lieutenant in the dental corps, U.S.N.

Correspondence.

REMOVAL OF ADHESIVE PLASTER WITH GASOLINE.

Holyoke, Sept. 13, 1920.

Mr. Editor:—

In the July 24 issue of the *Journal of the American Medical Association*, Dr. J. H. Carstens, of Detroit, published a note on the "Use of Adhesive Plaster in Closing Wounds," in which he commented on the discomfort of removing the plaster by the use of alcohol, the only agent suggested. Knowing a better method, I sent the brief note below to the *Journal*, and at the same time, entirely independently, Dr. A. J. Abbe, of Fall River, gave his experience in the same line. With the thought that possibly some of the constituency of the Boston Medical and Surgical Journal might find the suggestions of value, I am enclosing.

Yours sincerely,
R. E. Dickson.

(*Jour. A. M. A.*, Sept. 4, 1920.)

> *Mr. Editor:—*
>
> In a recent note, Dr. J. H. Carstens, in advocating the use of adhesive plaster in closing abdominal incisions, says: "In 10 or 12 days the plaster comes off easily and the patient does not complain, or only slightly. It can be soaked with alcohol, but the alcohol hurts more than removing the plaster without it." If an advocate of the use of plaster is not familiar with a better way of removing it certainly there are many others to whom this note may give a hint. Take a little gasoline in a common medicine dropper, scratch up with one's finger nail the tip of a corner of the plaster, let a drop of the gasoline flow under the edge, and instantly an inch of plaster will loosen. Another drop will remove the next inch, and so on. A bit of gauze held in place by plaster makes the best dressing for nearly all wounds or incisions about the eyes, face, neck, hands, etc. The plaster dressing can be removed daily, if desired, with absolutely no discomfort to the patient. If one once begins to use plaster, one will soon find that one has but little use for the slipping bandage.
>
> Alanson J. Abbe, M.D.,
> Fall River, Mass.

> *Mr. Editor:*
>
> In the *Journal*, July 24, Dr. J. H. Carstens suggests that adhesive plaster be used in closing abdominal incisions. He speaks of removing the plaster at the end of ten or twelve days, if necessary, soaking it with alcohol, which is not altogether satisfactory as "the alcohol hurts more than removing the plaster without it." If one will use gasoline instead of alcohol, wiping the plaster over with it, and then with a little gasoline-soaked gauze or cotton peeling the plaster back from the skin, beginning at the edges, until it has been removed entirely, the patient will be happy and so will the physician. Cleansing the plaster accumulation at the edges of the strips in the same manner is easy. Some years ago I found this worked so well that I adopted it as a routine. It is certainly a satisfaction to avoid the needless nagging discomfort of plaster removals in so simple a manner.
>
> R. E. Dickson, M.D.,
> Holyoke, Mass.

The Massachusetts Medical Society.

A stated meeting of the Council will be held in John Ware Hall, Boston Medical Library, 8 The Fenway, Wednesday, October 6, 1920, at twelve o'clock, noon.

Business:

Reports of committees.
Appointment of Auditing Committee.
Appointment of delegates to the Conferences of the American Medical Association at Chicago.
Appointment of delegates to the annual meeting of the Vermont State Medical Society at Rutland, October 7 and 8, 1920.
Incidental business.

Walter L. Burrage,
Boston, Sept. 29, 1920. *Secretary.*

Councilors are reminded to sign the attendance book before the meeting.

The Cotting Lunch will be served immediately after the meeting.

Abstract of Report of Committee of Arrangements.

Tentative plan for the Anniversary of 1921.

On account of the meeting of the American Medical Association in Boston, the usual Section meetings will be omitted in 1921, and the officers of the Sections, elected in 1920, are to remain in office through the anniversary of 1922.

Tuesday, May 31, there will be meetings of the Supervisors at 4.30 p.m., and the Council at 5.00 p.m. The Shattuck Lecture will be given by Dr. Haven Emerson of New York at 8.00 p.m.; all of the meetings of this day being in John Ware Hall at the Library.

Wednesday, June 1, there will be the annual business meeting of the Society at 9.30 a.m., followed by papers and by the Annual Discourse by Dr. F. W. Anthony, of Haverhill, at 12.00, noon. The dinner will be at 1.30 p.m.; all of the exercises of Wednesday being held at the Copley Plaza Hotel.

Charles H. Lawrence, *Chairman.*

RECENT DEATHS.

Dr. Harmon N. Morse, professor of inorganic and analytical chemistry at Johns Hopkins University, died at his summer home at Cheabeague Island on September 9, at the age of sixty-two. Dr. Morse was a graduate of Amherst College and the University of Göttingen, and was a member of foreign and American scientific societies. He is survived by his widow, two sons and a daughter.

The Boston Medical and Surgical Journal

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ORCHITIS IN MUMPS.

BY CONRAD WESSELHOEFT, M.D., BOSTON,

Visiting Physician, West Department (contagious), Massachusetts Homeopathic Hospital.

[From the Evans Memorial Hospital, Boston.]

ORCHITIS is the most common complication of mumps. To many practitioners it seems the only thing to be afraid of in the course of this contagious disease, the fear apparently being that testicular atrophy will follow, and that this will result in sexual impotency. Yet although this form of orchitis may give rise to considerable pain, and may cause inconvenience to the patient, it does not follow that the condition in itself or the atrophy that may result is generally so serious to the individual as is commonly supposed to be the case. A study of the subject brings to light much that is of interest and of practical value, and tends to allay the fears based upon an incomplete understanding of the nature of the condition, its end results, and the possibilities in the way of treatment.

Orchitis was described as a complication of parotitis in the Hippocratic writings. In 1752 Pratolongo mentioned orchitis as a frequent complication of the parotitis then epidemic at Gênes, and in 1761 Hamilton, in his classical description of mumps, raging at the time in Scotland, brought out the frequency of testicular involvement with subsequent atrophy of the gland.[1] By the beginning of the nineteenth century the medical profession of Europe, Great Britain, and America were generally aware of the contagiousness of mumps and the frequency of orchitis as a complication. During the last century a considerable amount of literature accumulated on the subject, which culminated in an excellent review of the subject by Laveran in 1879.[2] This work aroused great interest among the medical officers of the French Army, and to their efforts we owe to a large extent our present knowledge of the disease itself and its complications. The subject of orchitis in this connection was brought up to date by Comby[1] in 1893 and again by Schottmüller[3] in 1904. Since then although there have been résumés in textbooks and an occasional essay or note on some particular phase of the subject, no attempt has apparently been made to codify our information.

THE RELATION OF THE PAROTID GLAND TO THE GENITAL ORGANS.

The predilection of the testicle to the virus of mumps is a matter of considerable interest. The relation of the testicle to the parotid gland has attracted the attention of several authors. In certain vertebrates we find a definite physiological connection between the sex organs and the salivary and facial glands. Owen* states that during the breeding season, "a musky odor is emitted by the submaxillary glands of the crocodile, and pervades their haunts." In the swiftlets the salivary glands become peculiarly active in the breeding season, and secrete a substance akin to mucin, with which they form their snow-white nests—the edible bird's nests of the Chinese epicures.† Darwin‡ informs us that during the rutting season "the glands on the sides of the face of the male elephant enlarge and emit a secretion having a strong musky odor." It is also said that in camels the salivary glands are enlarged in the breeding season.[4] The Indian antelope possesses odoriferous glands about the face which are usually larger in the male than in the female, "and their development is checked by castration."*

Thus some remote connection between the salivary glands and the generative organs in man is suggested by the Darwinian theory of evolution and clinical evidence gives us abundant examples of the interrelationship of these two parts of the human body. After various injuries to the genital organs, such as catheterization, prostatectomy, insertion of a pessary, pelvic operation, delivery, abortion, etc., and even in the course of menstrual disorders and during the menopause, we sometimes have an acute simple parotitis.

Several instances have been recorded of repeated and simultaneous swelling of the parotid gland with each menstruation.† In certain cases the swelling of the parotid seems "to have replaced the menstrual flow."‡ Enlargement of the parotid has been observed to accompany each successive pregnancy.§ Finally, the parotid has been known to enlarge during or after the menopause.§

Paget* cites one case where salivation took place at each menstruation, and another where there was a definite diminution of parotid secretion with each period. Baisch† considers the disturbances of the sense of taste which occur during pregnancy as due to a reflex action on the gustatory nerve, referred from the genital organs. He holds that the salivation in pregnancy may be the result of a reflex through the nervous system acting on abnormally sensitive nerves—regardless of the vomiting and its natural stimulation of salivation. His thesis, though not convincing, offers much experimental and clinical evidence pertaining to the relation of the parotid gland and the sexual organs.

Postoperative parotitis has been the subject of considerable discussion and research. Stephen Paget,* in 1887, collected 101 cases of this condition, of which but 15 showed "septic symptoms," "septicaemia," or "pyaemia." He discredited the prevailing idea that the parotitis was always the result of pyaemia or oral sepsis, and without venturing on any explanation satisfactory to himself, suggested that the condition might in some way be related to the connection which exists between the parotid gland and the genital organs via the sympathetic nervous system. Bachmann† in 1907 argued that postoperative parotitis is always due to oral sepsis, and that the relatively open position of the mouth of Stenson's duct in comparison with that of Wharton's and Bartholini's ducts, is the predisposing factor. Morel[6] in 1908 gave out an extensive monograph on this subject. Out of 84 cases, three followed operations on the urinary tract, six

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Owen, R.: Anatomy of Vertebrates (London, 1866) Vol. i, p. 615.

Geddes and Thomson: The Evolution of Sex (New York, 1890), p. 231.

Darwin, C.: The Descent of Man (New York, 1872), Vol. ii, pp. 27, 266, 267.

Owen, R.: Anatomy of Vertebrates (London, 1868), Vol. iii, p. 632.

The idea is held by some that the bite of venomous snakes is more deadly during the breeding season. Were this true, it would be an interesting point in the above discussion, since "the poison gland of the snake is a modified form of the glandula labialis superior, and in all probability is equivalent to, if not identical with, the parotid of the mammalia." (Noguchi, H.: Snake Venoms, Pub. 111, Carnegie Institute, Wash., 1909, xvii, p. 47.) Those snakes which hibernate are particularly active in all respects when the warm weather brings them again out into the open and it is possible that with their increased metabolism the secretion of venom may be augmented. This is, however, merely coincident and not necessarily dependent on the increased activity of the sexual function. In the tropics no such idea seems to prevail. This is not surprising when we consider that a six-foot Cape cobra injects 15 to 20 times a lethal dose of his venom with one good bite. (Fitzsimons, F. W.: The Snakes of South Africa, London, 1912, p. 347). The idea that snakes are more deadly during the breeding season cannot be ascertained from Noguchi or Fitzsimons in the books referred to above, nor from Calmette. (Calmette, A: Venoms, trans by Austen, E., N. Y., 1908), or Mitchell (Mitchell, S. W.: Treatment of Rattle-Snake Bites, Philadelphia, 1861).

Paget[5]: *op. cit.*, p. 615; Morel[6]: *op. cit.*, p. 55; Dalché, P.: Reaction parotidienne à la menopause. La Gynecologie, August, 1903, p. 309.

Paget[5] *loc. cit.*

Paget[5] *loc. cit.*; Dalché *loc. cit.*

Paget[5] *loc. cit.*; Dalché: *loc. cit.*

Paget[5]: *loc. cit.*

Baisch, K.: Hyperemesis und Ptyalismus in der Graviditaet. Monatsch. f. Geburtsh., July, 1904, p. 47.

Paget[5]: *op. cit.*, p. 614.

Bachmann, F.: Zur Casuistik der postoperativen Parotitis. Kiel, 1907, pp. 15, 16.

on the digestive tract, and 76 on the genital tract. The incidence of parotitis was the same in both sexes.*

Morel[6]: *op. cit.*, p. 105.

Postoperative parotitis may follow any operation, just as suppurative parotitis may occur during any serious illness where oral sepsis is present. But aside from cases originating from pyaemia and oral sepsis, there appears to be a particularly high incidence of parotitis after injury to the genital tract, and especially after injuries to the ovaries and testicles; furthermore, this parotitis in the majority of cases is of the simple type, and clears up of itself.† When the orchitis is suppurative, the subsequent parotitis is also apt to be suppurative, and *vice versa*.

In Paget's series "in 93 cases out of 101, it was an isolated lesion, unaccompanied by any other inflammation like itself." (*loc. cit.*)

For a further consideration of the etiology of post-operative parotitis see Jacob[52] *op. cit.*, p. 552; Taylor, F. T.: The Connection between the Parotid Glands and the Sexual Organs, Lancet, London, Jan. 30, 1886, 1, p. 130; Schottmüller[3], *op. cit.*, p. 54; Deaver, J. B.: Post-operative Parotitis, Ann. of Surg., Philadelphia, 69, Feb. 19, 1919, p. 128.

Reasoning from analogy on the theory propounded by Abderhalden regarding the chemotaxis of groups of tissue cells in various parts of the body for certain poisons or foreign substances, and the theory advanced by Rosenow regarding the different selective affinities of certain strains of a given organism for certain tissues of the body, one can conceive of the pathological relationship between the orchitis and the praotitis in mumps. Such a speculative hypothesis—based on a combination of these two theories, on our meagre knowledge of the virus of mumps, and on clinical observations—offers at least a conception, vague though it may appear, of this phenomenon which has interested the medical profession for so many years.*

Paget's tentative theory of the relation of the parotid gland to the genital organs through the sympathetic nervous system offers an explanation of the physiological phenomena in this connection, but it does not suffice as an explanation of the pathological relationship in the course of an infection nor is it supported by the animal experimentations of Morel.

In order that such an hypothesis may not appear too arbitrary, it is well to mention some of the ideas hitherto advanced concerning the cause of testicular involvement during mumps. Schneider† considered masturbation as a causative factor in the development of orchitis. Dukes[8] asserted in 1899 that if patients were kept in bed eight days, orchitis would not develop, implying that the metastasis was induced by bodily activity during the acute stage of the parotitis; but he afterwards retracted this statement, as we shall see later. It was held by some that the contagion was carried from the mouth to the urethra by hand, and thus to the testicle. This notion has been disproved by the clinical researches of Lewis, who found that careful sterilization of the hands and protection of the glans penis did not reduce the incidence of complication.'"[9]

Quoted by Pliqué[7].

INVOLVEMENT OF OTHER GLANDS.

That the metastasis takes place through the circulation is evidenced by the fact that the virus of mumps attacks the ovary as well as the testicle. Oöphoritis is far more common in mumps than is generally supposed, but it is too commonly overlooked.[10] Josephson[11] has recently given a most complete monograph on this subject. Bartholini's glands[1] may become swollen in the course of mumps, and mastitis has frequently been reported as a complication in both males[12] and females.[13] Adenitis, dachryocystitis, pancreatitis, and enlargement of the thyroid and thymus* are mentioned among the complications of this disease, just as any of the salivary glands may become involved in mumps, so that the testicle is not the only portion of the male genital tract which suffers. Among 115 cases of mumps at Châlons recently reported by Ramond and Goubert[46] there were five cases of orchitis, 20 of epididymitis, 40 of funiculitis, and 23 of prostatitis and vesiculitis. Barthez and Sanné reported five cases of "urethritis,"[1] and other observers have noted a urethral discharge lasting from one to three days with negative bacteriological findings, and in which gonorrhea could be practically ruled out. The question arises whether this urethral discharge is the result of a urethritis or comes from an involvement further up.

"Castration or spaying causes an enlargement of the thymus gland, even in the mature animal in which this gland has undergone considerable involution," Howell, W. H., Text-book of Physiology, 6th edition, Philadelphia, 1915, p. 886. The functional relationship between the sexual organs and the ductless glands must be borne in mind in a consideration of the complications of mumps. See Marshall, F. H.: The Physiology of Reproduction, London, 1910.

The prostate unquestionably may become involved, with pain and definite enlargement on rectal examination, and with a urethral discharge. This may be a much more serious complication than the orchitis, so far as the late effects are concerned. Prostatic atrophy is far more apt than orchitis to bring about sterility, because insufficient prostatic fluid during the emission greatly decreases the chances of fertili zation of the ova, whereas a sufficient amount may carry even a diminished supply of spermatozoa to a successful fecundation. The incidence of prostatic involvement and subsequent atrophy due to mumps cannot be determined from the literature, but Robinson[18] records seven cases of partial or "complete" atrophy of the prostate "in which an antecedent parotitis seemed to be the sole etiological factor." As a cause of sterility in the male this neglected complication of mumps should receive more attention.

THE INCIDENCE OF ORCHITIS IN MUMPS.

Orchitis as a complication of mumps is confined to the age of puberty and adolescence. Rare exceptions to this are on record. Steiner[14] reports a case of orchitis in a nursing infant nine months old.* Fabre[16] reports a case in a boy of nine, and Armand‡ reports orchitis followed by atrophy in a boy of eleven. The incidence of orchitis apparently decreases in direct proportion to the incidence of the disease in advancing years.

The occurrence of orchitis varies in different epidemics of mumps, just as the disease itself varies in severity as well as in its complications. In schoolboys the incidence is much the same as in soldiers, and is subject to the same variations. Luehe[12] had only one case of orchitis among 118 cadets. Dukes[8] found a variation from 3.3% to 37.5% in different epidemics of mumps at Rugby School. During the same epidemic the incidence of orchitis varies greatly. In April, 1915, Massary and Tockmann[17] found orchitis in 27%, and in May of the same year in only 5%, with practically the same number of cases of mumps in each of these months. In Capitan's[13] series of 700 cases of mumps at the military hospital at Bégen, there were 50 cases of orchitis out of 316 cases of mumps in 1914, 1915, and 1916, or 16%; in 1917, there were 28 cases out of 189, or 15%, and in 1918 there were 49 cases out of 195, or 25%. At the Military School in Halifax, Brown[19] found orchitis in 50% in one epidemic of 20 cases. In 12 cases of mumps on board H. M. S. *Ardent*, reported by Noble,[20] orchitis developed in every instance.

Weigert[21] found that, out of 39 cases of mumps from the cavalry, 11 developed orchitis, while out of 40 cases of mumps from the infantry only one developed this complication. These findings so impressed this medical officer that he recommends dismounted drill for cavalry during an epidemic of this disease. Weigert's conclusions are not supported by such military and naval statistics as I have been able to collect. Out of 1106 cases of mumps in infantry 249, or 21.6%, developed orchitis. From the cavalry I could collect only 123 cases of mumps, of whom 25, or 20.3%, developed orchitis. If we add to these the 39 cases of Weigert we have 162 cases among cavalry with orchitis in 22.2%, which is practically the same as among infantry. We might as well advise shore duty for sailors under such circumstances, in view of the statistics from the good ship *Ardent* with orchitis of 100%, were it not that Manine[22] found 13 cases of orchitis out of 122 cases of mumps on ships of the French Navy, or 11%, while Clement* found 122 cases of orchitis out of 443 men and officers with mumps from the United States Navy, or 28%,—most of whom were doing shore duty. Weigert's recommendation is extremely interesting, but it lacks convincing testimony in its favor.

Védrènes† found, in a study of 25 epidemics of mumps, an incidence of orchitis in 26%. Longuet‡ collected 1555 cases of parotitis with 389 cases of orchitis, or 25%. Out of 4397 cases of mumps at Camp Wheeler, Radin[9] reports orchitis in 13.91%.

From the records at my disposal in which the percentage of orchitis is given, I have collected from all sources 8153 cases of mumps, with 1468 cases of testicular involvement, giving a total incidence of 18.0%.

UNILATERAL AND BILATERAL ORCHITIS.

The orchitis may be unilateral or bilateral. Strange to say, the right testicle is said to be more often affected than the left. The statistics I have accumulated seem to justify this idea, but the difference is not sufficiently great

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During an epidemic of mumps the father, mother and infant all contracted the disease; the father and the infant both having orchitis. In the latter the right testicle was involved. The left testicle was not fully descended.

The case of orchitis in a boy of four, cited by Comby[1] from de Cérenville,[15] does not appear to be a case of mumps. The original article suggests a case of septicemia and general adenitis.

Quoted by Comby, F., in Traité des maladies de l'enfance. by Grancher, Comby, and Marfan, Paris, 1897, p. 278.

Unpublished statistics on the complications of 443 cases of mumps from the U. S. Navy treated at the Haynes Memorial Contagious Hospital during 1917 and 1918, by Samuel A. Clement, M.D., resident physician.

Cited by Schottmüller, *op. cit.*, p. 44.

Cited by Soltmann,[23] *op. cit.*, p. 248.

TABLE I.

THE INCIDENCE OF ORCHITIS IN MUMPS.

AUTHOR	REFERENCE	CASES OF MUMPS	CASES OF ORCHITIS	ORCHITIS PER CENT.
		Infantry.		
Granier	24	495	115	
Delmas	25	125	21	
Servier	26	84	23	
Martin	27	48	9	
Calmette	28	55	10	
Laurens	29	118	32	
Jouloux	30	35	14	
Chauvin	31	45	16	
Weigert	21	40	1	
Jourdan	32	61	8	
TOTAL		1106	249	21.6
		Cavalry.		
Madamet	33	56	7	
Gérard	34	43	13	
Fournié	35	24	5	
Weigert	21	39	11	
TOTAL		162	36	22.6
Miscellaneous Branches: Army and Navy.				
Catrin	36	159	43	
Servier	26	21	8	
Antony	37	42	7	
Rizet	38	22	10	
Noble	20	12	12	
Manine	22	122	13	
Luehe	12	122	1	
Comby*	1	165	60	
Helber	39	15	5	
Brown	19	20	10	
Massary and Tockmann	17	243	59	
Capitan	18	690	127	
Moser and Arnstein	40	30	3	
Radin	9	4397	611	
Clement	l.c.	443	122	
Sorel	56	35	15	
Settekorn	71	38	13	
TOTAL		6576	1119	17.1
		Civilian.		
Dukes	8	186	43	
Edgecomb	41	33	2	
Tuke	42	10	1	
Hammersley	43	80	18	
TOTAL		309	64	20.7
		Summary.		
Infantry		1106	249	21.6
Cavalry		162	36	22.2
Misc. Army and Navy		6576	1119	17.1
Civilian		309	64	20.7
TOTAL		8153	1468	18.0

to warrant us in attaching any significance to the matter. Bilateral orchitis is considerably less frequent than bilateral parotitis.* The accompanying table shows 209 cases of orchitis out of a total of 1208, or a percentage of 17.0. When both testicles are involved, one is apt to become affected three to nine days after the other, rather than the two simultaneously. It is sometimes observed that the orchitis develops on the same side as the parotid swelling, and that with the involvement of the other parotid the other testicle becomes affected. This was particularly so in three small series (Noble,[18] Dukes,[8] Brown[19]). More stress has been laid on this coincidence than is warranted by the results recorded in the literature. According to the law of chances, with only two parotids and two testicles, the occurrence of the orchitis on the same side should not be looked upon as so remarkable. As a matter of fact the combinations seem to equal each other in the long run. The only thing of real interest and significance is that bilateral orchitis is proportionately less frequent than bilateral parotitis.

TABLE II.

INCIDENCE OF BILATERAL AND UNILATERAL ORCHITIS.

AUTHOR	REFERENCE	CASES OF ORCHITIS	RIGHT ORCHITIS	LEFT ORCHITIS	DOUBLE ORCHITIS
Rilliet	1	23	13	6	4
Jourdan	32	11	7	3	1
Servier	26	26	15	5	2
Catrin	36	43	18	12	13
Laurens	29	32	9	17	6
Dukes	Sc	6	4	2	0
Radin	9	554	231	221	102
Clement	l.c.	122	52	45	25
Settekorn	71	13	4	2	7
Heller	61	28*	12	14	2
TOTAL		858	365	327	162
Calmette	28	10			1
Rizet	38	10			7
Dogny	3	27			4
Jouloux	30	14			1
Ringsberg	45	279			33
Brown	19	10			1
TOTAL		350			47
TOTAL		1208			209

* Two of these were of doubtful mumps origin.

There is a general impression that the greater the severity of the parotitis, the more likelihood there is of testicular involvement. In my own experience this is to a certain extent true in so far as the concomitant involvement of parotid and testicle is concerned. That is to say, the severest cases of parotitis seem more apt to develop orchitis, and to develop this before the parotitis has subsided. Perhaps the apparent severity of the parotitis in these cases is really

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In Massary and Tockmann's series of 243 cases of mumps there were 191 cases of bilateral parotitis or 79%, and 52 unilateral cases, or 20%, of which 26 were on the left side and 26 on the right (*loc. cit.*).

In 128 cases of bilateral parotitis reported by Catrin, 55 began on the right side, 53 on the left side, and in 14 both parotids began to swell simultaneously (*op. cit.*, p. 638).

In a recent series of 120 cases reported by Gradwohl[44] *et al.*, the right parotid was involved in 70 cases and the left in 77, bilateral parotitis occurred in 43.

the result of the prodromal symptoms of the orchitis, the general constitutional disturbance being thus augmented before the orchitis is recognized. It is particularly in these cases that we are apt to get the symptoms of meningismus or encephalitis. On the other hand, the late development of an orchitis seems to bear little or no relation to the severity of the preceding parotitis. It is also stated that orchitis is more apt to follow bilateral mumps than when only one parotid is affected. This is borne out in Catrin's series.[*] Again, it is my experience that when the orchitis comes on within three or four days of the onset of the parotid swelling, the orchitis usually accompanies a bilateral parotitis, but when it is delayed one or two weeks, the preceding parotitis is just as apt to have been unilateral as bilateral.

(To be continued.)

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[*] In Catrin's series the 13 bilateral cases of orchitis developed after 13 cases of double parotitis; of the 30 unilateral orchitides, 26 were in cases of double parotitis, 2 occurred with a left, and 2 with a right parotitis (*op. cit.*, pp. 634, 635).

WHY RELIEF OF JOINT TROUBLES IS EASY OR DIFFICULT.

By Herman W. Marshall, M.D., Boston.

New methods continue to multiply for handling joint affections, and already there are more methods and agents extant than can be used skilfully, yet perfection in treatment has not been attained. Compared with the superabundance of kinds of treatments, unbalanced incomplete conceptions of natures of joint troubles stand in striking contrast.

Logically, therefore, some convenient device should be contrived whereby complex anatomic and physiologic relationships between organs that exert influences on joints directly or indirectly can be recalled more completely and accurately for quick making of clinical judgments in practice. Then, with improved conceptions and judgments, relief will be secured that otherwise will continue to be impossible indefinitely although methods and agents are greatly increased.

A graphic scheme is of service in illustrating the balance among favorable and unfavorable influences that always act in combinations on articular tissues, and of indicating a second balance existing between the sum of external influences in their reactions with internal resistance within joints.

There are only four main ways by which any joint can be influenced, namely through

A. *Mechanical influences* due to body motions, pressures of body weight on joint tissues, and external traumata.

B. *External influences* of mechanical traumata and pressures, heat, cold, electricity, and light rays of various kinds.

C. *Nervous influences.*

D. *Vascular influences* of varied chemical and physical natures.

Internal resistances of joints to outside influences depend on

E. Variable initial resistances of joint tissues existing at birth.

F. Presence or absence of local disease originating within joints.

G. Influence of age, and the results of favorable or unfavorable combinations of external influences acting in the past on joints continuously or intermittently.

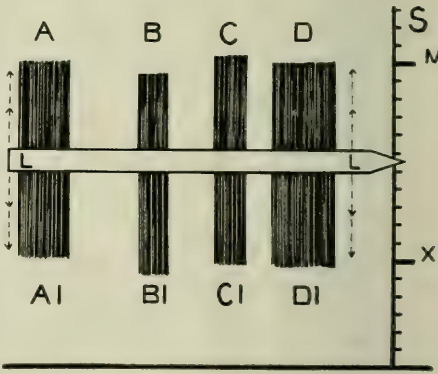

Fig. 1.—See text.

In Figure 1 let the balance of equilibrium between favorable and unfavorable outside influences be indicated by the arrow L, and the broad bands A, B, C, D, and A1, B1, C1, D1, may represent respectively the four main groups of favorable and unfavorable forces that are pulling it either upward or downward. The arbitrary scale S serves to measure the exact level of the balance of equilibrium of combined external forces from time to time.

Upon the scale S can be marked points X and M to represent ranges of internal resistances of joints, for there will be always some point X on the scale below which the indicator L cannot descend without development of abnormal symptoms. This transition point of lowest normal joint function will vary in position from time to time according as external combinations remain at high or low levels, and dependent also on changes due to internal causes, local disease, and old age. There will be a variable upper limit M in the range of normal joint function from time to time that changes with changes of X.

Figure 2 attempts to represent roughly the variable levels of X and M in different individuals at birth, average levels for X and M, levels to represent old age, acute infections and chronic local infections.

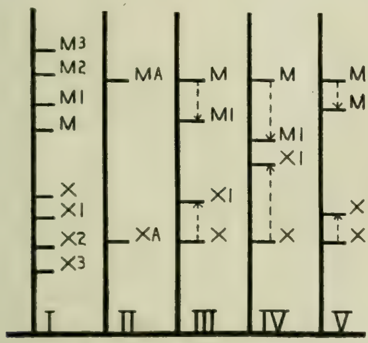

Fig. 2.—Graphic illustration of variable internal resistances of joints.

I. M-X, M1-X1, M2-X2, M3-X3, arbitrary representations of different ranges of normal resistances of joints at birth in different individuals.
II. MA-XA, arbitrary representation of average range of normal joint resistance.
III. M-X shown narrowing in range to M1-X1 under influence of old age.
IV. M-X shown narrowing in range to M1-X1 under influence of acute infection.
V. M-X shown narrowing in range to M1-X1 under influence of chronic infection or other mild local joint disease.

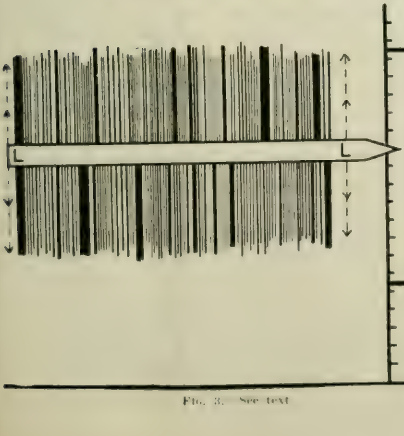

Fig. 3. See text

Figure 3 is supposed to show the four main groups of forces separated into some of their component subdivisions, and it serves to emphasize the complexity of the balance between external forces acting on joints. A list appended below includes 64 favorable and 70 unfavorable items, and illustrates still more emphatically what is indicated graphically in Figure 3. The latter does not indicate unfortunately how any one or more trivial influences, either favorable or unfavorable, may grow slowly or suddenly to important size, or how any one or more prominent factors may dwindle suddenly or slowly into insignificance without loss of continuity of action.

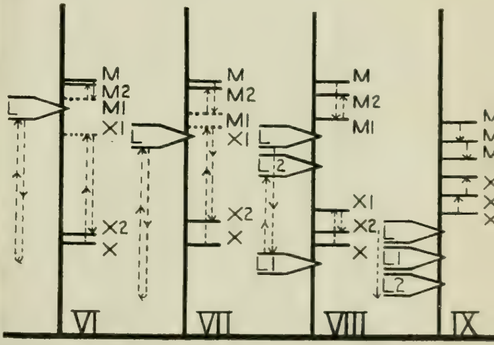

Fig. 4.—Graphic illustration of variations in balance of external forces an
ternal joint resistances under clinical conditions.

VI. *Moderate joint trauma.* L sinks to a lower level and returns
mediately to its previous level. M and X quickly narrow to M
then gradually return to M2-X2.
VII. *Severe joint trauma.* L sinks to a still lower level abruptly and re
immediately to its previous position. M-X narrows quickly to a d
that leaves X above L at M1-X1. Inflammatory joint symptoms de
that gradually subside as M2-X2 is reached.
VIII. *Moderate toxic vascular condition with joint involvement.* L
slowly to L1 and then rises gradually with recovery to L2. M-X
rows gradually to M1-X1 with development of abnormal joint s
toms, then returns gradually with recovery to M2-X2.
IX. *Progressive disease with local joint involvement.* L drops steadily
L to L1 and to L2. M-X narrows to M1-X1 and to M2-X2, tendin
reach a range of zero as a limit.

Figure 4 illustrates a few clinical examples in which the indicator L changes position while X and M vary in response to outside influences.

This graphic scheme helps to show clearly the general nature of every arthritic problem, that the aim of all treatments consists in raising and maintaining a high level of the indicator L, also in increasing the range of joint resistance M-X through removal of internal joint defects.

The writer believes this standard conception should be kept in mind prominently in all clinical cases, and that peculiarities of each as revealed in clinical histories, tests, and examinations should be assigned their proper places in it, with due regard to strengths and lengths of time of actions of each particular influence as well as to its kind. The use of a standard conception will tend to lead to greater avoidance of unbalanced judgments, will modify interpretations of clinical observations in important respects, and will direct attention to most vital phases of treatments. It may help to recall the truth of the following possibilities:

Improvements in patients' conditions noticed to follow single special therapeutic procedures may be results of different combinations.

H. A single special procedure may be a very important factor occasionally and outweigh all other changes in the balance so that it is the main cause for favorable results that ensue.

I. A single special procedure may represent a slightly favorable factor in ensuing changes, the latter being caused largely by unregulated changes or accompanying therapeutic measures on which little stress is laid.

J. A single special procedure may be practically neutral in its favorable and unfavorable effects, all improvements noted being due to unregulated changes or accompanying measures on which little or no stress is laid.

K. A single special procedure may exert a slightly or moderately unfavorable influence, yet ensuing changes may be favorable ones provided unregulated changes occurring, or accompanying therapeutic measures, are sufficiently great to outweigh the single special unfavorable influence.

Use of a standard conception may increase accuracy of judgments in many directions, and this means improvement in weakest, most important features of the present stage of medical progress and specialism when broad comprehensions of problems naturally diminish rapidly in accuracy as knowledge increases rapidly and becomes increasingly confusing.

OBJECTIONS TO USE OF A STANDARD CONCEPTION OF ARTHRITIS.

It may be argued by some persons that errors of judgment in using such a complicated conception will exceed errors attending the use of purely empirical methods. Probably this will be true when judgments are made in hasty superficial manner, yet solution of the difficulty lies in making better judgments nevertheless, not in extensions along empirical lines that only make a bad situation worse. Furthermore, as knowledge extends and groups of influences known to act on joints are split into smaller, less important divisions to become objects of special study, the likelihood increases that unbalanced inferences drawn from such studies will become increasingly erroneous until finally medical practice approaches the effect of charlatanism disguised on a scientific basis, unless judgments can be improved in some manner.

Physicians not infrequently ask the question what difference it makes whether explanations and understandings are strictly correct as long as patients get well. This attitude did not advance medicine in the past, does not encourage confidence now, nor will it advance progress in profitable directions in the future. As long as complicated relationships exist they have to be met in rational scientific ways and not ignored.

PRACTICAL ADVANTAGES OF A STANDARD CONCEPTION.

The altered viewpoint that it gives the user directs his attention to (1) contradictory clinical results and clinical opinions, (2) to the commanding anatomic and physiologic position of the central nervous system in its relationships with joint affections, (3) to speculations as to natures of obscure types of arthritis, (4) and it increases his efficiency in treatment of patients.

1. If one examines special methods and apparently contradictory results as recorded in medical literature, and looks for precautions that have been taken in judging possibilities mentioned under H, I, J, K, of the foregoing table, frequently it appears that the latter have entered into consideration very imperfectly or not at all. Workers often select the possibility that helps most to prove the values of their investigations, and they do not convince their readers that other explanations are not more correct ones. The numbers of papers that state clearly their authors' understandings of balanced relationships existent between joints and other organs are not in the majority so that readers have to accept conclusions largely on faith. This situation is unavoidable to some extent. At any rate confusion and contradictions are traceable usually to differences in different observers' viewpoints and interpretations, and, as underlying truths do not change with different observers, elucidations and harmony

can come only through better general agreements.

Applied medical science has its distinct limitations and it fails sometimes when it attempts to include the field of logic or other exact sciences involved more or less in best treatments for patients. Clinical papers are seen to be untrustworthy not infrequently because they are obviously very illogical although correct in other important scientific respects.

A standard conception of arthritis therefore helps the user to judge, accept or reject with increased skill new information published in medical literature.

2. Obscure relationships between the nervous system and the joints are among the first to be lost from view amid the confusing abundance of facts that have to be considered. It is easy to remember that strong emotions of various kinds exert decided influences on many organs because it is possible to recognize lachrymation, sweating, salivation, muscular trembling, accelerated heart rate, increased secretion of urine, diarrhoea or nervous dyspepsia, accompanying or following such nervous activity. Less tangible are so-called trophic nervous disturbances, variations of muscle tone, and slight continuous nervous control supposed by some to be exerted on the functions of various organs.

These slight nervous influences always will remain beyond powers of belief of those persons who demand extremely simple plain proofs of the complicated workings of an extremely complicated mechanism, because their characteristics are inherently obscure. Yet removal of foci of depressing mental stimuli in certain types of chronic joint disease probably is of much more importance than removal of infective foci in some instances. Joints succumb presumably in some instances to mild continuous harmful effects of circulating bacterial toxins. At other times they presumably succumb to altered vascular conditions which are induced by more or less continuous, slightly imperfect nervous control of the various organs, and which produces accumulations or deficiencies of substances normally in circulation. Joints are harmfully influenced by such unusual proportions of normal substances as when circulating urates in gout are associaeed with abnormal joint symptoms. There may be direct trophic influence of the nervous system on joint tissues in addition, but the facts can be neither proved nor disproved experimentally.

The writer is convinced from practical experience that conservative rational psychotherapy has shown its immense value already along with other therapeutic means in controlling certain obstinate cases of joint disease.

3. A standard conception of arthritis may lead to speculations as to the nature of rheumatoid (atrophic) arthritis through consideration of the clinical manifestations of the disease, and by comparisons with gout.

It is known that faulty elimination of urates is associated in some was with gout, and that urates crystallize out of the blood at times in the various tissues. Also it is understood that there are possibilities for accumulations of urates in circulation through faulty actions of kidneys; or excessive formations by the body tissues that have imperfect nervous control or from other defects within themselves; or through abnormally large ingestions of foods especially rich in urates; or through combinations of these causes.

Could a similar relationship exist between creatinin metabolism and rheumatoid arthritis? Creatinin is a product of normal metabolism and occurs in proportions and amounts that are not widely different from those shown by urates. It is derived particularly from muscles, and muscles atrophy particularly rapidly in acute attacks of rheumatoid arthritis. Is it possible that this soluble substance that does not crystallize readily and thus show conveniently its relationships, can affect joint and other tissues in characteristic subtle ways as urates analogously react on different tissues in gout? It may be possible that an acute attack of rheumatoid arthritis is precipitated by a sudden temporary shutting down of excreting powers of kidneys for creatinin; or a sudden increase of circulating creatinin from rapidly wasting muscles which in turn may have temporary defective nervous control or other internal defects: or an unusual intake of creatinin in the food finally may reach the blood stream in unusual quantities after passing the protective regulating apparatus of the alimentary tract; or there may be combinations of these causes which produce sufficiently large proportions of circulating creatinin to influence harmfully the joints along with skin and other tissues. It should be remembered that harmful proportions of circulating substances in one instance are not harmful necessarily in another case, because in the first instance joint resistances may be low from congenitally low resistances with subsequent poor balance of equilibrium of combined external forces acting on them; while in the second case there may have been high initial resistances of the joints at birth with subsequent very favorable balance of combined external forces acting on them. The latter consequently will withstand larger quantities of slightly irritating circulating substances for longer periods of time without development of abnormal symptoms than the first mentioned joints are able to do.

Authoritative answers can be made to the questions suggested only through painstaking, prolonged chemical experiments, and it is doubtful whether chemistry even can prove or disprove convincingly the ideas that have been suggested, because, as with gout, there are too many variable factors concerned to permit absolute confirmations or rejections of the stated ideas. Perhaps the latter are valuable as a tentative theory and may be more desirable than no rational conceptions at all.

4. A standard conception of arthritis increases the user's efficiency in treating patients because it permits him to realize that favorable balances may be restored often in more than one way.

An unbalanced view demands immediate removal of a single carious tooth or a slightly defective tonsil because of presumable slight absorptions of toxins into circulation from such sources, and it is argued that a very trivial factor may be the last straw to upset the delicate normal balance of joint functions. A more deliberate opinion will be based on more factors involved in the case. It may happen that a marked gastro-enteric defect is much more important, and its correction may lead to such general improvement of health that not only are joint troubles relieved but mouth infections may subside also without further purposeful care.

The presence of unusual crepitus in a knee joint may decide an enthusiastic surgeon that the joint lining should be inspected and trimmed if necessary immediately, and this is done often successfully. A more deliberate opinion will consider as well the possibility of relief through less mechanical use of the knee and through improvement of the patient's general condition. Differences of opinions undoubtedly always exist regarding appropriate times for operations, and patients are likely to demand explanations of the grounds for operations more carefully, whether patients' welfares are uppermost in the physician's mind when he gives his views, or whether the opportunity to do successful yet unnecessary operations determines his decisions.

Specific reactions of joint tissues possibly may be recalled by a standard conception of arthritis, and the fact recognized that a joint may be resistant in certain directions and non-resistant in other directions. For example, cases of rheumatoid arthritis that are non-resistant presumably to metabolic substances may improve greatly under infectious conditions that modify metabolism in marked degree. Such a patient may have his chronic arthritis improved in surprising manner by an attack of pneumonia or a severe erysipelas infection although these infections may be causes of infectious joint troubles in other patients.

One extremely important fact brought forcibly to view by the graphic picture of joint balances is that all therapeutic measures may be found both on favorable and unfavorable sides of the balance at one time or another, most beneficial methods becoming harmful under certain circumstances.

This happens if their actions are continued too long or with too large doses, or if they are carried out too thoroughly in case of surgical measures. Very often it is difficult to know precisely when to stop administrations to gain maximum benefits, and consequently proper end points are passed not infrequently.

The topic of when to give, and when not to give, and particular treatment is the matter that needs continuous careful discussion even more than discussions of new principles and new methods. For these small details that one occasionally hears referred to scornfully and compared to trivial details of household cookery nevertheless control successes and failures in treatment to very important degrees.

This difficulty can be minimized to a certain extent through keeping more clearly in mind the fact that most tissues react to many therapeutic influences with primary increases and secondary later diminutions in their normal functions. Yet these well known details are so difficult to handle that search continues to be made for new remedies of more miraculous natures that do not possess such disadvantages. It is safe to predict that none ever will be found until living tissues change their natures. Each new discovery that is applied rather indiscriminately at first always until its limitations are discovered, will take its place finally in the group of other useful agents with its proper restrictions, if it is not discarded entirely.

While search for marvellous remedies goes on there is a quiet forgetting of established physiological principles that were learned in perfunctory manner in medical school courses, and it is true that many of us should review at more frequent intervals the elementary principles of physiology. There can never be any single specific remedy or cure-all that can ever correct perfectly the effects of numerous widely differing kinds of influences, with their varying strengths of action, as the latter combine to act on the joints.

Relief of joint diseases is easy when some important infective focus in whatever location it happens to be situated can be easily and completely eradicated. Relief is easy when marked local defects in joints can be removed by surgical means, or when mechanical supports satisfactorily combat important temporary mechanical causes. It is easy when derangements of balanced relationships between organs can be corrected by simple diet regulations and regulations of eliminative functions, or when rest, or drug treatment for short periods, or physical therapeutic measures soon restore a normal balance of relationships among the organs of the body.

Relief of joint conditions is difficult when there are deeply seated infective foci that cannot be removed; when any important organ, the kidney for example, exhibits progressive disease of marked degree; when balanced relationships between organs are easily deranged and difficultly corrected as when unstable balance of the nervous system causes recurrent upsets of general metabolic nature; and when joint structures are involved in intractable disease like neoplasms, syphilis, or tuberculosis.

On the whole a standard conception of the balanced nature of joint diseases assists any physician to adhere more closely to the principles and ideas which are best in the long run for patients, for the welfare of the medical profession and for himself; and occasionally it makes possible successful results in seemingly impossible cases.

FAVORABLE AND UNFAVORABLE INFLUENCES ACTING DIRECTLY AND INDIRECTLY ON JOINTS.*

Favorable.	*Unfavorable.*
Mechanical	Mechanical
1. Favorable amounts of normal use of joints, and of weight bearing.	1. Unfavorable amounts of normal use of joints, and of weight bearing.
2. Favorable anatomical development of joints for functional activity.	2. Unfavorable anatomical developments and deformities.
3. Surgical removal of harmful anatomic peculiarities, and surgical correction of harmful deformities.	3. Unsuccessful surgical treatments that increase local anatomical defects or deformities.
External.	External.
4. Favorable degrees of heat and cold and favorable climatic changes.	4. Unfavorable exposure to heat or cold or to unfavorable climatic changes.
5. Favorable influences of treatments locally with radiant heat, baking, electricity and massage.	5. Unfavorable influences of overtreatment locally with radiant heat, baking, electricity and massage.
6. Beneficial influences of mechanical supports.	6. Unfavorable influences of too much or too prolonged mechanical support.
	7. Unfavorable influences of mechanical traumata, single or repeated.
Nervous.	Nervous.
7. Favorable trophic nervous control of joints (?)	8. Unfavorable nervous control of joints by trophic nerves (?)
8. Favorable indirect influences on joints of favorable nervous control of the various organs of the body with resultant changes in the blood stream.	9. Unfavorable indirect influences on joints of faulty action of the nervous system on the various organs of the body and with resultant unfavorable changes in the blood stream.

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* This list could be made more complete and more accurate, but it is sufficiently so, in spite of some [illegible], to serve the purpose for which it is intended, namely, to indicate the great complexity of the balance between favorable and unfavorable influences acting at times on the joints.

Vascular.

(as affected by kidney functions)

9. Favorable function of renal epithelium in removing from the blood urates, creatinin, bacterial toxins, products of bacterial metabolism, and all waste products that may influence joints harmfully.
10. Favorable changes of renal functions resulting from improvement in nervous control of kidneys (?)
11. Favorable changes of renal functions resulting from favorable cardiac changes.
12. Favorable changes of renal functions resulting from favorable changes of digestive functions.
13. Favorable changes of renal functions resulting from favorable internal glandular changes.
14. Favorable changes of renal functions resulting from favorable muscular changes and activities.
15. Favorable changes of renal functions resulting from improved functions of the skin.
16. Favorable changes of renal functions resulting from favorable changes of quantities of water and salts taken.
17. Favorable changes of renal functions resulting from drugs favorably influencing kidneys.
18. Favorable changes of renal functions following surgical operations on kidneys.
19. Favorable changes of renal functions following fitting of mechanical abdominal belts and kidney pads.

Vascular.

(as affected by digestive functions)

20. Favorable function of gastro-enteric mucosa, gastro-enteric musculature, pancreas and liver.
21. Favorable changes in digestive functions resulting from improved nervous control.
22. Favorable changes in digestive functions resulting from improved cardiac functions and favorable blood pressure changes.
23. Favorable changes in digestive functions resulting from improved renal functions.
24. Favorable changes in digestive functions following recovery from serious pulmonary diseases.
25. Favorable changes in digestive functions resulting from operations on digestive organs.
26. Favorable changes in digestive functions following use of abdominal mechanical supports.
27. Favorable changes in digestive functions resulting from movements of the body and muscular activity.
28. Favorable changes in digestive functions produced by tonic drugs that affect favorably the gastroenteric mucosa, peristalsis, or liver or pancreas.

Vascular.

(as affected by kidney functions)

10. Unfavorable function of renal epithelium in removing from the blood urates, creatinin, bacterial toxins, products of bacterial metabolism, and all waste products that may influence joints harmfully.
11. Unfavorable changes of renal functions resulting from unfavorable changes in nervous control of kidneys (?)
12. Unfavorable changes of renal functions resulting from unfavorable cardiac changes. and unfavorable changes of blood pressure.
13. Unfavorable changes of renal functions resulting from unfavorable changes of digestive functions with resultant increased work for kidneys.
14. Unfavorable changes of renal functions resulting from unfavorable internal glandular changes.
15. Unfavorable changes in renal functions following serious skin lesions.
16. Unfavorable changes in renal functions resulting from unfavorable changes in quantities of water and salts taken.
17. Unfavorable changes in renal functions resulting from overtreatment with drugs affecting the kidneys.
18. Unfavorable changes in renal functions following unsatisfactory surgical operations on kidneys.
19. Unfavorable changes in renal epithelium resulting from bacterial infections of the kidneys, circulating metallic poisons, alcohol, local kidney disease, renal calculi. neoplasms, traumata.

Vascular.

(as affected by digestive functions)

20. Unfavorable function of gastro-enteric mucosa, gastro-enteric musculature, pancreas and liver.
21. Unfavorable changes in digestive functions resulting from defects in nervous control of digestive organs.
22. Unfavorable changes in digestive functions resulting from defects of heart or blood-vessels.
23. Unfavorable changes in digestive functions resulting from disturbances of normal renal functions.
24. Unfavorable changes in digestive functions due to developing pulmonary troubles.
25. Unfavorable changes in digestive functions resulting from unsuccessful operations on digestive organs.
26. Unfavorable changes in digestive functions due to visceral ptosis.
27. Unfavorable changes in digestive functions from excessive use of drugs affecting stomach, intestines, liver or pancreas.
28. Unfavorable changes of digestive functions due to faulty diets.

29. Favorable changes in digestive functions due to favorable diets.
30. Favorable changes in digestive functions in response to gastric or rectal lavage.

Vascular.

(as affected by cardiac functions)

31. Favorable strength of cardiac muscle and cardiac development.
32. Favorable changes in heart action resulting from proper exercise.
33. Favorable changes in heart action caused by favorable changes in its nervous control.
34. Favorable changes in heart action following relief of kidney defects.
35. Favorable changes in heart action resulting from relief of gastric distention and chronic digestive disturbances.
36. Favorable changes in heart action due to recovery from pulmonary troubles.
37. Favorable changes in heart action resulting from favorable changes in internal secretions.
38. Favorable changes in heart action produced by drugs affecting the heart favorably.
39. Favorable changes in heart action produced by hydrotherapy.

Vascular.

(as affected by pulmonary functions)

40. Favorable function of alveolar cells of the lungs.
41. Favorable changes in pulmonary functions modified by increased abundance of fresh air.
42. Favorable changes in pulmonary functions from proper exercise.
43. Favorable changes in pulmonary functions resulting from improved heart action.
44. Favorable changes in pulmonary functions induced by improvements in nervous control of respiration.
45. Favorable changes in pulmonary functions produced by subsidence of serious renal disturbances.
46. Favorable changes in pulmonary functions produced by pulmonary drugs.
47. Favorable changes in pulmonary functions resulting from physical therapy.
48. Favorable changes in pulmonary functions following surgical operations on pleura or lungs.

29. Unfavorable changes in digestive functions resulting from lack of bodily movements and muscular exercise.
30. Unfavorable changes in digestive functions due to local diseases of various sorts, inflammations, new growths, bacterial putrefactions of intestinal contents.

Vascular.

(as affected by cardiac functions)

31. Unfavorable strength of cardiac muscle and poor cardiac development.
32. Unfavorable changes in heart action resulting from lack of proper exercise.
33. Unfavorable changes in heart action caused by unstable nervous control of the heart.
34. Unfavorable changes in heart action resulting from defective kidneys.
35. Unfavorable changes in heart action caused by gastric disturbances.
36. Unfavorable changes in heart action produced by developing pulmonary troubles.
37. Unfavorable changes in heart action resulting from excessive internal secretions, notably thyroid secretion.
38. Unfavorable changes in heart action resulting from overdosage with heart stimulants.
39. Unfavorable changes in heart action from excessive stimulation with hydrotherapy.
40. Unfavorable changes in heart action from arteriosclerosis and increased peripheral resistance in the system of blood vessels.
41. Unfavorable changes in heart action due to pericarditis and endocarditis.
42. Unfavorable changes in heart action due to improper administrations of vaccines and sera, or to tobacco, coffee, etc.

Vascular.

(as affected by pulmonary functions)

43. Unfavorable function of alveolar cells in the lungs.
44. Unfavorable changes in pulmonary functions due to deficiencies of fresh air
45. Unfavorable changes in pulmonary functions caused by lack of exercise.
46. Unfavorable changes in pulmonary functions due to cardiac disease or defects.
47. Unfavorable changes in pulmonary functions from faulty nervous control of respiration.
48. Unfavorable changes in pulmonary functions due to development of serious renal disease and its effect on the respiratory nervous center.
49. Unfavorable changes in pulmonary functions from excessive use of drugs.
50. Unfavorable changes in pulmonary functions resulting from unsuccessful surgical operations on chest and lungs.
51. Unfavorable changes in pulmonary functions due to faulty posture.

49. Favorable changes in pulmonary functions due to corrections of faulty postures.

Vascular.

(as affected by functions of organs of internal secretion, bone marrow, lymph glands and formed elements of blood)

50. Favorable functioning of these various tissues.
51. Favorable changes in functions of these various tissues following favorable changes in action of other organs and in nervous control if the latter exists.
52. Favorable changes in functions of these various tissues after favorable administrations of drugs or extracts of glands of internal secretion, notably improvement in haemoglobin after administration of iron.
53. Favorable changes in function after surgical removal of portions of thyroid gland. or removal of infected lymph nodes and tonsils.

Vascular.

(as affected by dermal functions)

54. Favorable function of the skin.
55. Favorable changes of dermal functions resulting from improvements of functions of various other organs, notably the digestive tract.
56. Favorable changes of dermal functions due to vaso-motor changes in blood vessels of the skin, or due to massage, hydrotherapy. or local applications.

Vascular.

(as affected by muscular function)

57. Favorable muscular function and development.
58. Favorable changes in muscular functions due to favorable changes in nervous control, exercise, or improved functions in kidneys, digestive tract, and other organs.
59. Favorable changes from mechanical protection in weakened or irritated conditions.
60. Favorable changes in functions due to administrations of drugs that relieve muscle stiffness, or due to massage or other forms of physical therapy.
61. Favorable changes from surgical treatment following injuries.

Vascular.

(as affected by bacteria or their toxins, metallic poisons, therapeutic vaccines and sera)

62. Favorable influence of certain lactic acid bacteria in inhibiting growth of harmful intestinal putrefactive bacteria.
63. Favorable influence of various rheumatic vaccines and sera.
64. Beneficial effects of surgical removal of various bacterial foci that are contributing their harmful products to the blood.

52. Unfavorable changes due to development of pulmonary and pleural disease, and traumata of lungs, ribs and pleura.

Vascular.

(as affected by functions of organs of internal secretion, bone, marrow, lymph glands and formed elements of blood)

53. Unfavorable functioning of these various tissues.
54. Unfavorable changes in functions of these various tissues following unfavorable changes of function of other organs and of nervous control if the latter exists.
55. Unfavorable changes in functions of these various tissues after excessive administration of drugs or glandular extracts.
56. Unfavorable changes in functions after too much surgery on the thyroid gland.
57. Unfavorable changes in functions of these various tissues resulting from development of serious local pathological states in any one or more of them.

Vascular.

(as affected by dermal functions)

58. Unfavorable function of the skin and its glands.
59. Unfavorable changes of dermal functions resulting from digestive troubles or disturbed functions of other organs.
60. Unfavorable changes in skin due to harmful vasomotor changes or trophic nerve disturbances.
61. Unfavorable functions due to burns or serious skin diseases.

Vascular.

(as affected by muscular function)

62. Unfavorable muscular strength and development.
63. Unfavorable changes of muscular function due to defects in nervous control.
64. Unfavorable changes of muscular function following improper exercise.
65. Unfavorable changes of muscular function from immobilization by mechanical means.
66. Unfavorable changes of muscular function resulting from defective functions of kidneys, digestive tract, and other organs.
67. Unfavorable changes of muscular function due to local muscle disease or traumata.

Vascular.

(as affected by bacteria or their toxins, metallic poisons, therapeutic vaccines and sera)

68. Unfavorable influences of bacterial foci in tonsils, teeth, naso-pharynx, gastro-enteric tract, genito-urinary tract, or other organs that contribute harmful bacteria or their products to circulating blood.
69. Harmful influences of therapeutic vaccines and sera from overdosage.
70. Unfavorable influence of lead in circulation in chronic lead poisoning.

THE INFLUENCE OF THE MEDICAL PROFESSION ON MEDICAL LEGISLATION AND THE PUBLIC WELFARE

By John B. Hawes, 2nd, M.D., Boston.

In a recent editorial in the Boston Medical and Surgical Journal the following statement was made: "The report of the Joint Committee in Legislation published in last month's issue of the Journal is discouraging to those who hoped for progressve action on the part of the Legislature this year. It is discouraging to realize how little influence, except in a negative way, the medical profession exerts through the Joint Committee. While no backward step has been taken, the record is one of complete failure to gain any step forward."

Such a statement as this, which is known to be the truth as far as Massachusetts is concerned, might with few exceptions be applied with equal force to the condition of affairs in almost every other state of this country. From 1907 to 1920, as Secretary of a State Commission which was in charge of the Massachusetts sanatoria for consumptives and of the tuberculosis campaign in this State in general, it was part of my duties to attend hearings not only in regard to tuberculosis and matters directly related to my board of trustees but also those concerning health matters in general. What has been accomplished at such hearings during these years by the various committees on legislation representing the Massachusetts Medical Society bears a striking resemblance to what has been accomplished this year, as described in the editorial quoted above. Anti-vaccination bills have been successfully opposed and killed each year, though with difficulty; many good measures have been supported and occasionally their passage secured; bad bills have been opposed and occasionally their enactment prevented. Yet, as a whole, it is undoubtedly true that the influence of the medical profession in this state as represented by the Massachusetts Medical Society on its legislative body, the Senate and House of Representatives, is conspicuous by its absence.

Other organizations representing various groups of men, industries, trades and occupations are not without influence at the State House. It is an undoubted fact that a union such as that of the bricklayers or that of the amalgamated cigar makers can exert a powerful influence on those who represent them; any large public service corporation seems to be able to make its wants known quite definitely and clearly on Beacon Hill. In the *Boston Evening Transcript* of May 22, 1920, interesting comment is made on the influence of the now powerful Farmers' party in Ontario, Canada. On two recent occasions when the representatives of the farmers in the Legislature seemed about to take certain action that did not meet with the approval of those they represented "the executives of the Farmers' Organization issued a broadside to Farmers' Clubs throughout the country with the result that the members in the House were deluged with such a flood of telegrams and letters that they immediately reconsidered their former decision."

I do not for a moment criticize these various committees and the men serving on them who have represented the Massachusetts Medical Society and other medical organizations of the State. These men have given freely of their time and energy and have worked long and faithfully to bring about what they knew and what we all knew was for the good of the community, and yet the fact remains that they have failed in the vast majority of instances to produce results. Why have they failed? The answer to this question is one that vitally concerns every physician in the country. Why does a group of men, each of whom has spent the best years of his life in training for the noblest and best of all professions, have so little influence in the community? Surely our aims and ideals are of the best. This no one can deny. Then it must be our means and methods that are at fault. No other conclusion is possible.

With this idea firmly fixed in my mind, I wrote a personal letter to the Secretary of every State Medical Society in the country, describing what I believed to be a most unsatisfactory state of affairs in Massachusetts and asking for the details as to how each respective medical society attempted to solve this problem and the results obtained. My answers were interesting in the extreme. A summary and brief synopsis of these letters is here given.

There were 32 answers to the 48 letters that I sent out. In 17 instances, over 50%, the reply was to the effect that the medical society had a committee on State and National Legislation or its equivalent which accomplished little or nothing. Excerpts from some of these letters show the general trend of answers and likewise a marked similarity:

Arizona: "This association has a legislative committee which takes whatever action may seem proper. Its real value is distinctly limited."

California: "As far as I can make out, the California State Medical Society has nothing to do with legislative matters."

Connecticut: "There is a legislative committee which appears in opposition to anti-vaccination bills. It rarely accomplishes anything. They have no satisfactory system."

Delaware: "There is a committee on public policy and legislation. It has no influence on legislation."

Iowa: "There is a legislative committee of five members. The amount accomplished is largely due to the personal efforts of the chairman of this committee. There is no organization in the Society."

Kansas: "The influence of the State Society with the State Legislature is not of great importance. There is a committee on legislation which accomplishes little or nothing."

Maine: "There is a legislative committee which appears at hearings and which has little or no influence. The greatest help comes from physicians who are members of the legislature. The medical profession at large has little or no influence."

Minnesota: "The Association has a legislative committee which is somewhat inactive."

Nebraska: "There is a Committee on Public Policy and Legislation which accomplishes nothing." The writer does not believe that anything can be accomplished by legislative committees or by direct influence.

New Hampshire: "The Society has a legislative committee which appears before the House and Senate committees on various bills." So far, the writer believes this committee has been a failure.

New Jersey: "There is a legislative committee which has no influence. The only influence that the medical profession has is through its members who are the family physicians of the legislators."

New Mexico: "There is a legislative committee which accomplishes nothing."

Porto Rico: "The Medical Society of Porto Rico has a legislative committee, but so far it has not accomplished anything favorable for the medical profession."

Wisconsin: "There is a legislative committee which does nothing. They have at times maintained a paid lobbyist which accomplished nothing. A committee before the Legislature seems invariably to arouse suspicion."

North Dakota: "The legislative committee plan is a failure."

South Carolina: "Legislative committees amount to little or nothing."

West Virginia: "There is a Committee on Public Policy and Legislation," which in the writer's opinion, has been a failure. "Things are put off until there is dire need of action, and then it is too late to do anything."

That the situation is not quite so bad as the preceding replies would indicate is shown by the following extracts from my replies from other states and comments on them.

Idaho: My correspondent believes that the only successful plan is for the Society to put a competent paid man on the job with instructions to get results. No details as to how he is to do this are given.

Illinois: The principles under which the Illinois Society acts are: (1) A good, live man at the head of the legislative committee, who lives at the Capitol. (2) Organization of medical men throughout the State, so that they can see their representatives in the Legislature while they are at home on week ends. (3) Information given to the medical men in each county throughout the State pertaining to bills that are introduced. (4) Sufficient funds: In Illinois each member of the State Society is assessed fifty cents each for this purpose. (5) The emphasizing of the fact that there is no personal or selfish purpose in the arguments brought forward; that it is simply a question of keeping up the standard of health and medical legislation as it should be. Further details are given.

Louisiana: There is a Committee on Public Policy and Legislation composed of the most influential physicians in the state. All matters are referred to this committee. The members visit the Capitol, if necessary, and use whatever influence they can either for or against legislative matters. Its work seems to be fairly satisfactory.

Maryland: There is a legislative committee appointed each year to take charge of medical legislation, but this method has not proved to be very effective. This year the plan is to organize the physicians throughout the State into committees, which will work with the candidates for election immediately after the primaries. The idea is to have the candidates informed regarding the type of legislation they need, even before their election.

Missouri: The secretary of the Association is likewise secretary of the Committee of Health and Public Instruction. He keeps informed concerning all details that touch the medical profession or public health. When necessary, he sends information concerning such bills to each of the component societies in the State Association (100 county societies out of 115 counties) giving the title and number of the bill, and what it is about. The physicians then act individually, as well as through the county societies. They get the names of the family physicians of each member of the Legislature. The leading members of the profession then get together with the leading members of the Legislature or with the Governor. Special influence is brought to bear upon the committee before a bill is given a public hearing. This, of course, requires time, numerous visits to the Capitol, frequent consultations with local physicians and friendly politicians. It is not considered wise to have a paid lobbyist. There is evidently an active and influential medical association in this State.

Montana: "The handling of legislative problems is easy if done systematically. Medical men best acquainted with important members of the Legislature talk over the desired measures and educate them on the subject." Here again no details are given. The plan sounds far simpler than it must really be.

New York: The State Medical Society has a legislative committee which for many years has been very efficient. It does not limit itself to attending hearings, but acts by personal interviews with the legislators. The New York County Medical Society also has a legislative committee, acting in unison with the State Society. For several years, the President of the State Society has taken an active hand in the legislative work. New York has adopted the principle of personal interviews and influence with the Legislature. They also ascertain who is the family or personal physician of each Legislator.

North Carolina: The committee, however, selects one doctor in each county who can be called upon to confer with, write or wire his representative or senator in the General Assembly. There are 100 counties, and the Association has been able to turn in a telegram to the senators and representatives in the General Assembly from more than 75 per cent. of these counties on a given morning. This has been of distinct influence. The plan, which corresponds closely to that referred to above of the Farmers' Association in Ontario, has many advantages.

Ohio: A wide-awake State Medical Society, an enterprising medical journal, coöperation of the various welfare and health agencies, have accomplished a great deal in this State. The various members of the Society at home in conference with their Legislators have accomplished much. There is a representative from each county medical society, and these representatives get together and discuss pending legislation. The results are good.

Pennsylvania: The President of the Society has a desk in the Department of Public Health at the State House. He is in harmony with this department. He is closely affiliated with the medical members of the House and Senate, and attends committee meetings, not as a lobbyist, but simply as an advisor. He lets it be understood that he represents 11,500 physicians in Pennsylvania. The results depend largely upon the personality of the president of the society. Pennsylvania is to be congratulated in having as the president of its State Medical Society a man who can devote so much time and who is able to exert so much influence as is apparently the case here.

South Carolina: The President of the State Medical Society calls a meeting of one or more influential physicians from each county in the State during the early days of the Legislature. These men go immediately to their representatives and tell them what legislation is desired and what is desirable. There is no expense attached to this plan.

Tennessee: When the Association wishes the enactment of any law in which they are interested, they appoint a committee which will give necessary time and energy to complete the matter. My correspondent is opposed to the medical profession interfering in legislation, as the responsibility does not belong to them. The responsibility should be put on the legislators.

The medical profession should see to it that the legislators are informed regarding what is good or bad legislation, and then leave the rest to the law-makers. Here, again, is outlined a plan that sounds simple enough but is not easy to carry out.

Texas: There is a legislative committee, consisting of the secretary, president, and three others. The secretary of the Association is secretary of this committee or council. He keeps the Council informed, and active in regard to legislative matters, and on him depends the success of this plan. The Society employs a man who remains constantly with the Legislature and keeps the secretary thoroughly informed as to the legislative situation, as it pertains to public health and medical profession. Telegrams, letters, and other methods of appeal are used, all having been carefully prepared in advance. Educational propaganda are carefully conducted with the various county societies and their legislative representatives. It is necessary to impress legislators with the fact that the effort being made is organized, and that a record is kept of the proceedings. Those who expect to remain in politics have a wonderful respect for organization.

Washington: There is a legislative committee, but it has been hampered in its work by the lack of a constructive program. They have come to the following conclusions:

1. The best time to interview a legislator is prior to his election.
2. A constructive program must be adopted and must be patiently followed from year to year.
3. This program must be for the best interests of the public.
4. The legislative committee should have complete freedom of action and individual action should be discouraged.

West Virginia: As mentioned above, there is a Committee on Public Policy and Legislation which in my correspondent's opinion has been a failure. Things are put off until there is dire need of action, and then it is too late to do anything. A legislative committee should go to work on the legislators before their election, if possible, by personal interviews. It is important to know the family physician of every legislator.

Here then is the evidence which, as every one will admit, goes to show clearly that the medical profession in this country, as far as the individual states are concerned, and indeed, in my opinion, as far as the country as a whole is concerned, is not the power for good that it should be. Can anything be done to improve this state of affairs? This question I would strongly answer in the affirmative and would make the following suggestions:

1. Education of the public as to its needs in health matters and legislation therefor. This should be done by articles of local interest whenever possible, printed in *newspaper English* in the daily and weekly lay press. Providing such articles contain news and are of local interest every newspaper will be glad to print them and will recognize their importance and value.

2. Education of the legislators. This is a difficult task. Find out the family physician of every legislator and instruct such physicians as to what is needed and obtain their coöperation and promise to interview the legislators in question personally in regard to important subjects. Find out the views of each legislator prior to his election and make such views, favorable or unfavorable, known to the physicians and the electors of his district.

3. Education of the medical profession. In the medical press and by personal letters and at medical meetings impress upon every doctor that it is part of his duties and part of his responsibility to the public to educate his patients and the families under his care concerning public health matters and preventive medicine.

4. Every State Medical Society might well employ a capable man at full or part time to assist in the details necessary to carry on the above campaign. He should also prepare the means and methods so that at short notice a given legislator, or group of legislators, can be deluged with letters, telegrams, and personal interviews urging his action for or against certain measures. The average legislator will not be greatly influenced by a legislative committee representing what is to him a somewhat vague and intangible thing such as a state medical society, particularly when he hears from such a committee at a time when his mind is usually already made up as to which way he intends to vote. He will be influenced, however, by appeals from men, constituents of his, whom he knows personally, from his own district, and who he likewise knows have large influence among the voters of his district. Such influence will be all the greater if it is brought to bear

at any early stage when his opinion is still in the formative state.

These are, of course, merely suggestions, the details of which must depend upon local conditions. I believe, however, that by carrying them out in whole or in part the medical profession will be a greater power for public good than it now is.

TRANSFUSION IN OBSTETRICS. BLOOD MATCHING AS A ROUTINE ON PREGNANT PATIENTS.

By R. S. Titus, M.D., Boston.

The trend in obstetrics, as in all other branches of medicine and surgery, is toward prevention. We examine routinely thousands of specimens of urine for the occasional one containing albumen; we take many routine blood pressures, watching for the important rise; we do careful physical examination to rule out the infrequent patient unfit to have babies; we examine many pelves to find the unusual one which contains some pelvic obstruction to safe delivery; we do many Wassermanns for the one that proves positive—all this to find the occasional patient who is in one sense or another obstetrically abnormal. That very few abnormal patients are so found is no argument against trying to find them. All this routine is essential if obstetrical disasters are to be avoided. The ideal of obstetrics is not reached until we have done all that can be done to safeguard our patients against any and all disasters.

The accidental bleeding cases are the ones which by no examination can we anticipate. Detached placentas will occur, placenta praevias give warning only when they bleed, postpartum hemorrhages will come when least expected. For all loss of blood there is nothing like replacing blood, and severe shock is best treated by blood transfusion. Time spent in getting ready for safe transfusion on hemorrhage or shock patients is time lost if any time so spent could be saved. The technic of blood transfusion has been so perfected that it is known to be unsafe to give blood to anyone unless the blood of the donor and the blood of the recipient have been matched and found compatible. Occasional instances of incompatibility have been observed in the matching of bloods of people in the same group. Everyone who is in group four is a potentially safe donor, but even though the person be in group four it is clinically unsafe to transfuse with that person's blood until his blood has been matched with the blood of the person to whom it is to be given; and all this takes a certain amount of time—time which may be very, very precious, and time which may be entirely saved. It is a perfectly simple matter to match the blood of the pregnant patient with her husband's or with some person's in group four, any time within the last month or six weeks of expected delivery. Matching blood means only a few minutes if one is prepared to do it, and if one has a safe donor at hand when the need of transfusion arises, much time otherwise spent in getting a donor can be saved.

For some time it has been my custom to match the bloods of my patients with the blood of their husband and with the blood of a group four person. This has been done within six or eight weeks of expected delivery. Telling the patients of the very extraordinary condition that so rarely occurs to warrant this procedure meets with their full approval. Strangely enough only one of the husbands whose blood I have matched with his wife's has been compatible; on the other hand, the group four person has been compatible with the pregnant patient's blood in every instance. One hears occasionally of patients who have died because of hemorrhage, when the time spent in getting ready for the transfusion was too long. If one of these patients can be saved by the simple routine procedure of blood matching the habit is well worth while. One such disaster is enough to warrant this routine on many, many patients. Such routine, of course, is not practicable in clinics taking care of patients at home. So far as hospital practice goes, all patients arriving who have had any hemorrhage and cases in which the possibility of hemorrhage is present should be matched in order to meet the emergency if it should arise. Among men doing obstetrics and obstetrics alone any procedure which tends to lessen the dangers of delivery for their patients certainly is worthy of consideration. It is upon this basis that blood matching as a routine is advocated.

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THE TRAINING OF RELIEF NURSES.

The Trustees of the State Infirmary at Tewksbury are to institute, after October 1, a one-year course for the training of "relief nurses." They have recognized the great need of the community, as well as of the hospitals, for the type of nurse who will, in a measure, take the place of the "experienced nurse" known to the community twenty-five years ago, but now, as a class, nearly extinct. In the course they offer, the age limits, by preference between 18 and 45; the education, that of the equivalent to the standard grammar school education; opens, to what should be a goodly number of women, an opportunity to secure such an amount of training as will enable them to give valuable service in the communities in which they reside.

The nursing situation throughout the state is extremely serious. The largest amount of suffering falls upon the middle class and upon country districts, since the very poor are provided for in the hospitals and the rich may be able to obtain nurses. The middle class, not proper subjects for pauperization and not desirous of receiving charity, are unable to pay the increased rates in the hospitals where the poor receive services free, and would be unable to compete with the rich in increased prices for trained service. The trustees in the Tewksbury experiment will depend largely upon the coöperation of the medical profession in the effort. If every physician who reads this Journal will recommend one or more women suitable for this work the experiment will be a success and other institutions may follow suit. The trustees before deciding upon this course talked the matter over with various associations of graduate nurses, most of whom endorsed the measure with the understanding that it would be made very clear that graduates from the one-year course were not full-trained nurses.

It may be advisable later to define what schools will be allowed by the Commonwealth to give courses for which certificates are to be granted, but it is to be hoped that the certificate from a school, recognized and proven as proper to give instruction, will be accepted for registration if it is ever deemed wise to make registration the necessary preliminary to practice.

It is the greatest desire of the trustees to supply to the community by this project not highly trained "almost physicians," nor nurses trained as in their regular course to be capable of the finest operating-room technic nor even the care of cases requiring the largest experience and most trained judgment, but rather to help to supply to the hospitals those who may relieve the more fully trained nurse from many of the minor and mechanical duties of her work and also to bring to the community those who may aid the trained nurse where two nurses may be required, or, in the event of a chronic long-standing or not extremely critical case, help supply those who have had sufficient training to be helpful and who have taken up the work because of their love of nursing.

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INFANT AND CHILD WELFARE WORK IN BOSTON.

The work carried on by the Baby Hygiene Association in Boston demonstrates the value of organized infant welfare supervision in reducing the mortality rate among infants and children of pre-school age. From one hundred and thirty-three deaths per thousand infants in Boston in 1910, the mortality rate has dropped to ninety-six per thousand at the present time; this reduction may be attributed in considerable part to the efforts of the clinics maintained by the Baby Hygiene Association. The Association was established in Boston in 1906, when, in spite of the fact that the milk supply was good and there were six hospitals ministering to the welfare of babies, the infant death rate was high because of the ignorance displayed by mothers in the feeding of their babies. A physician was engaged therefore to attend each health station and advise the mothers in regard to proper feeding. The work has now been extended to include the supervision of children from the time of birth until the school age is reached and the school physician assumes the responsibility. Formerly the custom has been to leave the children without any medical supervision as soon as they were old enough for adult diet. The lack of any organized effort to keep these children of pre-school age well resulted in deplorable negligence and ignorance in the maintenance of healthy conditions among the younger children. Since 1917, six clinics have been opened in Boston for the benefit of this group, with the gratifying result that they now have a registration of over nine hundred children, who present a striking contrast to the formerly uncared for group. The work of the clinics for babies is promoted by the appreciation expressed by the mothers to each other; similarly, the work of the clinics for older children is helped by the interest manifested by the children themselves.

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A PROFESSIONAL PROTEST.

In its issue for September (page 53) *Our Dumb Animals* has seen fit to republish an illustration from *Life* representing the well known views of that periodical with regard to the medical profession. While these views may be tolerable and even amusing in such a publication as *Life*, it seems hardly excusable that a magazine published by a society which has always professed and practised courtesy and high regard towards physicians should go out of its way to express so discourteous and unjust an attitude towards the profession.

After all, it probably matters little what anyone says or writes in detraction from medical science, since truth is great and is bound to prevail. Nevertheless, the publication of such witticisms at the expense of the medical profession may serve to mislead for a time the unthinking, retard and make difficult the progress and diffusion of medical knowledge advantageous to the community, and ultimately react to the disfavor of those who perpetrate them.

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MEDICAL NOTES.

Appointment of Dr. A. Gosset.—Announcement has been made of the appointment of Dr. A. Gosset, professor of external pathology of the Paris medical faculty, to the chair of clinical surgery, to succeed Professor Quénu.

Bubonic Plague in Galveston.—On September 9 the ninth death and twelfth case of bubonic plague was reported from Galveston, Texas.

The Wilson Laboratories.—The name of the Hollister-Wilson Laboratories, which have been directed by the same policies and standards as those maintained by Wilson and Company, has been changed to the new name, "The Wilson Laboratories."

Appointment of Dr. Arthur H. Morse.—Dr. Arthur H. Morse has been appointed professor of obstetrics and gynecology in Yale University School of Medicine, to succeed Dr. Joshua M. Slemons, who has resigned.

Professorship in the University of Alberta.—Dr. Ardrey W. Downs has been appointed to the chair of physiology in the University of Alberta. Dr. Downs was formerly assistant professor of physiology at McGill University.

Appointment of Dr. W. S. Lazarus-Barlow.—Announcement has been made of the appointment of Dr. W. S. Lazarus-Barlow to the University chair of experimental pathology at Middlesex Hospital Medical School, London.

Return of Lieut.-Col. Harry Plotz, M.C.—After spending several months in investigating the spread of typhus fever in Poland, Southern Russia, and Eastern Europe, Lieutenant-Colonel Harry Plotz, M.C., has returned to this country.

THE UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE.—Plans have been made for the erection of a pathological laboratory building by the University of Tennessee College of Medicine. The building will be located near the Memphis General Hospital, and will cost approximately $75,000. The medical school will have entire control of the teaching facilities in the hospital for a period of twenty years, and will nominate the medical, surgical, and laboratory staffs of the hospital.

APPOINTMENT OF DR. DAVID MARINE.—Announcement has been made of the appointment of Dr. David Marine, associate professor of experimental medicine in Western Reserve University, Cleveland, as director of laboratories in the Montefiore Home and Hospital, New York City.

APPOINTMENT OF DR. NICHOLAS KOPELOFF.—Dr. Nicholas Kopeloff has been appointed associate in bacteriology at the Psychiatric Institute of the New York State Hospitals. Dr. Kopeloff was formerly bacteriologist of the Louisiana Sugar Experiment.

SANITARY WORK AT PORT ARTHUR, TEXAS.—The inspection and laboratory work for the city of Port Arthur, Texas, is now under the direction of Mr. R. G. Upton, who formerly was assistant sanitary engineer of the Texas State Board of Health.

ROYAL COLLEGE OF PHYSICIANS OF LONDON APPOINTMENTS.—The following lecturers have been appointed by the Royal College of Physicians of London: Dr. F. Parkes Weber, Mitchell lecturer, 1921; Dr. G. Graham, Goulstonian lecturer, 1921; Dr. T. Lewis, Oliver Sharpey lecturer, 1921; Dr. A. Whitfield, Lumleian lecturer, 1921; Dr. R. O. Moon, FitzPatrick lecturer, 1921; and Dr. G. M. Holmes, Croonian lecturer, 1922.

SECOND INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY.—The Second International Congress of Comparative Pathology, with Professor Perroncito as president, will be held in Rome in the spring of 1921.

THE INTERNATIONAL SURGICAL SOCIETY.—Announcement has been made that the next international congress of the International Surgical Society will be held at London in July, 1923, under the presidency of Professor Macewen of Glasgow.

AWARD OF HONORARY FELLOWSHIPS.—The Royal College of Surgeons of England has conferred recently honorary fellowships on Professor A. Depage, of Brussels; M. Pierre Duval, of Paris; Professor John M. T. Finney, of The Johns Hopkins University, Baltimore, and Dr. Charles H. Mayo, of Rochester, Minnesota.

AWARD OF DEGREE TO DR. J. C. MCWALTER.—The degree of Doctor of Literature has been conferred by the University of Ottawa on Dr. J. C. McWalter, high sheriff of Dublin, and president of the Dublin Branch of the British Medical Association.

ACADEMY OF MEDICINE OF BUENOS AIRES.—The first centenary of the Academy of Medicine of Buenos Aires will be celebrated in 1922 with a contest on medicine and allied sciences. For the three best papers presented the following prizes will be presented: the first of 5,000 pesos and a gold medal; the second; 3,000 pesos and a silver medal; and the third, 1,000 pesos and a diploma.

DONATION TO THE UNIVERSITY OF HEIDELBERG.—There is to be founded at the University of Heidelberg, to be affiliated with the Institute for Hygiene and under the direction of Professor Kessel, an institute for research on albumins. The sum of 500,000 marks has been donated to the University for the purpose.

BOSTON AND MASSACHUSETTS.

APPOINTMENT OF MR. ARTHUR G. ROTCH.—Mr. Arthur G. Rotch of Boston has been appointed manager of the New England division of the American Red Cross, to succeed Mr. James Jackson. Mr. Rotch has been assistant manager of the division since December, 1917, and was acting manager during Mr. Jackson's absence in Europe early this year. During the war he devoted the major part of his attention to the communication service work of the Red Cross. Mr. Rotch was graduated from Harvard College in the class of 1903. Before joining the Red Cross he was a landscape architect. He is a director and member of the executive committee of the Infant Hospital of Boston and vice-president of the Massachusetts Central Health Council.

AWARD OF HONORARY COMMISSION TO DR. ALFRED WORCESTER.—Dr. Alfred Worcester, of Waltham, has received recently from the King of Belgium a commission as officer of the Order of Leopold II, for his service in Switzerland as a Red Cross officer in caring for the Belgian children.

Bequest to the Addison Gilbert Hospital.—Among the bequests in the will of the late Sarah P. Ayer of Gloucester is a gift of four thousand dollars to the Addison Gilbert Hospital of Gloucester.

Appointment of Miss Sally Johnson.—Miss Sally Johnson, a graduate of the Massachusetts General Hospital in 1910, has been appointed head of the training school for nurses at the hospital, to succeed Miss Sara E. Parsons, who is planning to leave Boston to make a nursing survey in Missouri and Oklahoma. Miss Parsons has been superintendent of the school since 1910; during that time an affiliation with Simmons College for a five-year course leading to a B. S. degree and a diploma of nursing has been established. Miss Johnson was formerly instructor and assistant superintendent of nurses at the Peter Bent Brigham Hospital, and for the last three years has been superintendent of the training school in Albany, New York.

NEW ENGLAND NOTE.

French Orphanage Fund.—The New England Branch of the French Orphanage Fund has announced that the total contributions now amount to $617,511.43.

Obituary.

JOHN MORGAN, M.D.

The following reminiscence, written by Mr. Philip Hale, and published recently in the *Boston Herald*, is a worthy tribute to the memory of Dr. John Morgan, and deserves republication in full:

Many in this city remember gratefully Dr. John Morgan, the oculist, who died last week. He was not only singularly skilful in his profession, he was a beneficent man who thought more of a patient's eyes than of his pocketbook. It was not easy to obtain from him a bill for the service rendered, whether it was an operation for cataract or merely a prescription for spectacles; and when a bill was finally extracted from him, it was always modest, sometimes ridiculously so. It was his habit to inquire, and not merely from curiosity, into the profession, trade, business of a patient; if he thought the patient was in humble circumstances, the charge, if any was made, was trifling. Brusque in manner, he was the personification of kindness. In the report of his death it was stated that "one of his whims was to pick out newsboys and street urchins who had eye ailments and give them free treatment." This was not a passing "whim." During his years in Boston, he gave many professional men, who were constantly using their eyes, sometimes abusing them, free treatment, in spite of their protest.

When we first visited him, before he began his examination, he asked us if we were sure that the earth was not flat. We quoted the good old description given years ago in the school geographies. He then went on to show why the earth was flat; he talked amusingly, eloquently. Learning that we were in a newspaper office, he thundered against inaccuracy in statement and in phraseology. "You fellows write about a 'madhouse.' Now, a house cannot be mad. You should say a house for madmen." At the end of twenty minutes or half an hour, he began his examination. Meanwhile his waiting room was crowded with impatient patients.

He was so independent, so radical in his views that he disconcerted the great majority of his fellow-oculists. They regarded his moderate charges, his unbounded philanthropy as unprofessional. Harsh and unjust things were said about him by some, who, admitting his skill, thought he was a dangerous person. One of these men, however, distrusting his own ability, brought one of his relatives suffering from cataract to Dr. Morgan, and asked for secrecy. This amused Dr. Morgan hugely. When he left Boston for New York, many mourned the departure of the oculist, the skilful practitioner, the rugged, brilliant man, the staunch friend.

Miscellany.

EXAMINATION FOR ARMY MEDICAL AND DENTAL CORPS.

The Secretary of War has directed that another examination be held October 25 to 31, 1920, to determine eligibility for appointment of applicants for the Medical and Dental Corps of the Regular Army under the provisions of Section 24 of the National Defense Act amended by the Act of June 4, 1920.

Persons of the following classes who served as officers of the United States Army at some time between April 6, 1917, and June 4, 1920, are eligible to take this second examination:

a. Those who for any good reason did not apply and were not authorized to take the July examinations.

b. Those who were authorized to take the July examinations but who for some good reason were unable to appear before the examining boards.

c. Those who were authorized to take the July examinations and who appeared before the examining boards but who for some good reason of their own volition or through illness or accident failed to complete the examination.

d. Those examined during the July examination who were found disqualified on account of physical defects which have been removed by operation or which do not exist at the time of the October 25 examination.

The examination will not be competitive. The number of vacancies in the Medical Corps is sufficient to provide for any reasonable number of applicants who may qualify for appointment. The reference in War Department announcements limiting appointments to be made to 200 does not apply to the Medical Department.

As in the past examinations under the provisions of the Act referred to above, the military record and general efficiency of the officer will be determining factors for appointment. Candidates must be 58 years of age or under and meet the physical requirements fixed by the War Department.

Age in determining eligibility for grade based on that of July 1, 1920. Rank to date from July 1, 1920.

It has been the policy of the boards reviewing the reports of examination and records of applicants not to recommend the appointment of any individual in a grade higher than that which he held at any time in the service, unless the circumstances are exceptional.

Applicants for appointment will be submitted to the Adjutant General of the Army on Form No. 739, A. G. O., and for persons in the military service will be submitted through military channels. In addition to stating the arm of service desired each applicant will state the grade for which he applies. Any applications received later than October 9, 1920, cannot receive consideration. All applications will be accompanied by a letter of transmittal addressed to The Adjutant General of the Army, setting forth the circumstances which bring the application within the classes above enumerated.

The scope of the examination in the Medical Department will be as follows:

Medical Corps.

M. D. degree exempts applicant from the educational examination. Professional examination is written and comprises the following subjects: Medicine; Surgery; Sanitation; Administration.

Additional Examination. Candidates may select from the professional subjects in which they have specialized during the term of service, one or more subjects for additional examination; such examination is optional with the candidate.

Dental Corps.

Operative Dentistry; Prosthetic Dentistry; Oral Surgery; Administration.

Additional Examination. Candidates may select from the professional subjects in which they have specialized during their term of service one or more subjects for additional examination; such examination is optional with the candidate.

Applications submitted through military channels will be expedited by all concerned.

Applicants of class *d*, paragraph 2, should have their physical defects removed without delay as their physical fitness for appointment will be definitely and finally determined without further delay when they appear for examination.

Blank forms for making application, Form No. 739, A. G. O., may be obtained from The Adjutant General of the Army or at any military post or station.

ANNUAL ETHER DAY INVITATION.

The Trustees of the Massachusetts General Hospital invite all members of the medical profession to attend the Ether Day exercises at the Massachusetts General Hospital on Monday, October 18, 1920, at four o'clock. Dr. Alonzo E. Taylor of the University of Pennsylvania will give the annual Ether Day address.

SOCIETY NOTICES.

Suffolk District Medical Society.—The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, 8 The Fenway, Thursday, November 4, 1920, at four o'clock.

Candidates should make personal application to the Secretary and present their medical diploma at least one week before the examination.

Richard H. Miller, *Secretary.*

402 Marlborough Street, Boston.

RECENT DEATHS.

Dr. Frederick H. Gerrish died at Portland, Maine, on September 9, at the age of sixty-five. Dr. Gerrish was a graduate of the Maine Medical School, and contributed several text-books to medical literature.

Dr. Joseph Homer Gelineau of Easthampton Mass., died Aug. 16, 1920, at Northampton, as a result of a broken neck received in an automobile accident. He was driving a car for the first time, his chauffeur being away, and came into collision with a telephone pole. He was a graduate of the Baltimore University School of Medicine in 1906, was thirty-eight years old and is survived by his widow and one son. During the great war, Dr. Gelineau was in the Army Medical Corps.

Dr. Charles Holt Thomas, died at his home in Cambridge, September 4, 1920, aged 70 years. He was born at New Bedford, August 26, 1850, the son of James Brown and Araminta Taber Thomas. After attending Gleason's Academy in New Bedford, he entered the Medical School of Boston University where he was graduated in 1888, and settled in practice in Cambridge.

At one time Dr. Thomas was visiting physician at the Massachuetts Homeopathic Hospital, Associate Professor in Clinical Medicine at the Boston University Medical School, chairman of the Cambridge Board of Health from 1907 to 1909, and director of the Reliance Coöperative Bank. He was a member of the Massachusetts Medical Society, Boston Homeopathic Medical Society and Massachusetts Homeopathic Medical Society. Dr. Thomas was a thirty-second degree Mason and also belonged to the Odd Fellows.

Dr. Thomas is survived by his widow, who was Julia Leona Winsor of Duxbury, whom he married October 17, 1877, and by one son.

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Original Articles.

A CLINICAL APPARATUS FOR MEASURING BASAL METABOLISM.

BY FRANCIS G. BENEDICT, BOSTON,
AND
WARREN E. COLLINS, BOSTON.

[From the Nutrition Laboratory of the Carnegie Institution of Washington, Boston, Mass.]

WHILE the Nutrition Laboratory is amply provided with numerous types of respiration apparatus for studying intricate problems in nutritional physiology, the interest of clinicians in respiratory exchange has influenced the trend of our development of experimental apparatus the past few years. Since it was recognized that the costly respiration calorimeters were impracticable, even for some of the best equipped hospitals, a simplified respiration chamber[1] apparatus was constructed and has been used in at least three hospitals. The great obstacle to studies of respiratory exchange has been the necessity for a complete equipment for gas analysis. To avoid this an apparatus was devised whereby the oxygen consumption could be read directly as the contraction in volume of a spirometer bell, and the carbon-dioxide production could be obtained by weighing certain bottles. This apparatus was described under the title, "A portable respiration apparatus for clinical use."[2] Subsequent to its description extensive comparison tests of this apparatus with standard respiratory-valve apparatus were carried out, in which three breathing appliances were employed and a large number of unpracticed, normal subjects were studied. These tests showed that the "portable apparatus" gave results in full accordance with the standard respiratory-valve method.[3] The fact that no gas analysis was involved led early to the adoption of this portable apparatus by a relatively large number of clinicians.

While, as was stated in the original description of the apparatus, when compared with the very cumbersome respiration chambers and the battery of spirometers and gas analysis apparatus employed in most other methods, this apparatus is portable or, more properly speaking, transportable, since it can be moved from ward to ward or even from bed to bed in a hospital, nevertheless criticism has justly been made that the apparatus is not, strictly speaking, portable, and apparently in the minds of clinicians a truly portable type is much to be desired.

In a recent series of notes[4] dealing with the portable apparatus, attention was called to the fact that in the use of an electric blower to move the air current we were unfortunate enough to select one, the manufacture of which has since been discontinued. To overcome this difficulty, recommendations were made to install an outer positive blower directly connected with an electric motor. Believing firmly that, in spite of all adverse criticism against having the electric motor *inside* the air current, that the method employed in the original type of apparatus of moving the ventilating current of air by means of a small, high speed, rotary air impeller was the most satisfactory, we have continued our tests of various types of blowers and motors and incidentally have somewhat modified the original form of portable apparatus, so that now we feel perfectly justified in presenting it to clinicians as a truly portable apparatus. The spirometer remains essentially unaltered. Fortunately we have been able to find a hair dryer, commercially long established and well distributed, which with very slight modifications may be used in place of the original instrument recommended. Concessions in the line of portability have been made by making the support of the wheel carrying the counterpoise and bell collapsible and, finally, the soda-lime used as an absorbent for the carbon dioxide, instead of being placed in a heavy glass bottle, has been enclosed in a well-fitting can placed below the hair dryer inside of the spirometer itself. The details of the whole apparatus are shown in general in Figure 1.

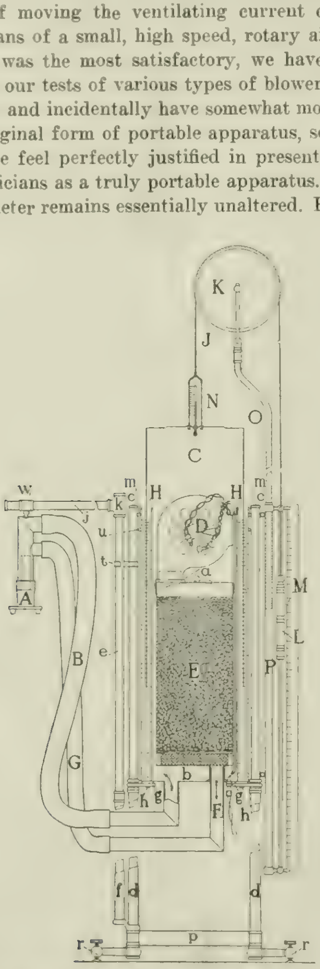

Fig. 1. Respiration Apparatus. *A*, mouthpiece; *B*, tube conducting expired air to bell *C*; *D*, hair dryer, *E*, soda-lime container, *F* and *G*, tubes conveying air current to mouthpiece *A*; *HH*, tank in which bell *C* floats, *J* and *K*, cord and pulley supporting bell *C*; *L*, counterpoise; *M*, pointer on counterpoise; *N*, thermometer; *O* and *P*, supports for pulley *K*. *a*, rubber gasket; *b*, rubber gasket; *c*, *c*, tubes supporting spirometer; *d*, *d*, lower part of frame supporting spirometer, *e* and *f*, telescoping tubes supporting mouthpiece and tubing; *g*, *g*, supporting plates; *h*, *h*, knobs fitting into *g*, *g*; *jk*, part of support for mouthpiece and tubing; *mm*, attachment to support *c*, *c*, to tank *HH*, *p*, circular band connecting four tubes, *d*, *d*; *r*, *r*, levelling screws; *t*, sliding ring; *u*, knobs for support of apparatus when collapsed; *u*, sliding ring.

The underlying principles of this apparatus are established by a number of researches which have taken place in this laboratory for a number of years past; particularly that the inhalation of an oxygen-rich atmosphere does not materially modify or alter the respiratory exchange.[5] The Emmes modified method of reading makes it possible to do away with the 3-way valve. Since the main clinical use of such apparatus is for the determination of oxygen, the calcium chloride bottles necessary for the determination of carbon dioxide may be discarded. In the new apparatus the spirometer itself contains practically the entire ventilating air system, including the blower and the soda-lime can. The details of the various modifications and parts of apparatus are as follows:

Modification of Spirometer. The type of spirometer first described in the portable respiration apparatus has undergone slight, though important, modifications. To make room for the soda-lime can,* the bottom in the spirometer, which in the original apparatus was about three-fourths of the way up and was used as a support for the hair-dryer, has now been removed and replaced by a true bottom upon which the soda-lime can may rest. This bottom contains two short pipes, one coming from the mouthpiece and the other leading to it. The support, O (Figure 1), for the aluminum counterpoise wheel, K, instead of being double is now single, with a slight offset, and is so made that it can be telescoped when the apparatus is being transported.

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* When this apparatus was nearly completed we learned through a personal communication that Dr. J. H. Means of the Massachusetts General Hospital had placed a soda lime container in the space occupied by the hair dryer in the earlier form of the portable respiration apparatus.

Hair Dryer. We have been fortunate in securing a hair dryer,* D (Figure 1), which with but slight modifications fits perfectly into the original type of spirometer. This, we believe, will be of interest to those who are already in possession of the original portable apparatus and have had difficulty in securing hair dryers. This hair dryer is substantially made, with a cast aluminum housing, and for use in this apparatus is divested of heating unit, handle and switch; in fact, the air discharge nozzle must be cut off for about 4 cms. That part to which the handle is attached is likewise somewhat cut off (12 mm.) and the leads brought out and connected with the plug attached to leads coming up inside of the spirometer, as shown in Figure 1. This hair dryer has been upon the market for many years and we are assured by the manufacturers that they have every intention of continuing its manufacture, as it is a well established article of trade. It gives most satisfactory results and, as will be seen later, the electric current can be cut down materially by external resistance.

Soda-lime Can. In the construction of the soda-lime can we were governed by the fact that the hair dryer can immediately force the air through soda-lime and thus deprive it of carbon dioxide and send it in a respirable condition to the mouth. A very simple form of can E, (Figure 1), has resulted. It consists of a galvanized iron can, in the bottom of which there is an opening somewhat off center to fit conveniently over the discharge pipe, F, from the spirometer, *i.e.*, leading the air to the mouth. The top of the can is removable and likewise has an opening set off center sufficiently to take the discharge end of the hair dryer. The interior screen and layers of cheese cloth to prevent the discharge of dust from the soda-lime are shown in Figure 1. Soda-lime such as is commonly used in all respiration apparatus of this type may be employed. We have recently employed successfully the soda-lime used in war gas masks. While under ordinary conditions it is absolutely essential to have the soda-lime fairly moist to absorb carbon dioxide to its greatest efficiency, in this particular type of apparatus where the air enters the soda-lime moist from the lungs almost any kind of soda-lime will do. To keep the cap in place, a good, stout, rubber band is snapped around it. Where the can fits over the pipe in the bottom of the spirometer, it rests against a rubber ring gasket, *b*, thus making a reasonably tight closure. A gasket, *a*, is used where the hair dryer is attached at the top.

Ventilation Tests. As a result of a great deal of experience in the laboratory, it has been deemed desirable that the air current in any of the several types of closed circuit apparatus should blow not less than 25 liters per minute by the mouthpiece to prevent rebreathing. The hair dryer will discharge a very large volume of free air and consequently it is necessary to cut down the rate of discharge by external electrical resistance, usually by a 120-watt lamp directly in series, and even under these conditions with ordinary soda-lime we find that there is no difficulty in getting a delivery of 60 liters of air. Where the finer soda-lime, such as that used in gas masks, is employed, the resistance to the air passage is somewhat higher, so that about 35 liters are secured with an external resistance of 120-watt lamp. The testing of the ventilating conditions existing in the soda-lime cans is fortunately very easily carried out. With the motor running, the bell, C, filled with air, and the thumb over the mouthpiece, A, an assistant at a given signal forcibly collapses the air pipe, B, leading from the mouthpiece to the spirometer, *i.e.*, the larger of the two rubber tubings. At the same instant the thumb is removed from the mouthpiece, the bell instantly starts to descend and the length of time it requires to make a complete descent is noted. These bells should travel over a distance corresponding to not far from 9 liters and consequently 9 liters in 20 seconds or less is ample ventilation. Indeed, there is a certain disadvantage in having too high a ventilation, primarily on account of the unnecessary heating of the motor, and secondarily on account of the fact that the less current passing through the motor the greater the factor of safety in case of accident, stoppage of motor, with building up of current, burning out of resistance, and combustion in an oxygen-rich atmosphere.

Danger of Combustion. Much has been said with regard to the fact that the earlier types of hair dryers have not infrequently "burned out." In a recent series of notes,[6] this subject was discussed in considerable detail. With the new form of apparatus an external lamp in series with the hair dryer is essential. The glowing of the filament, which is usually a little less than half brightness, is likewise an indication that the current is on. A series of tests has shown us that with the Hamilton-Beach hair dryer, when the current is first turned on, about 0.85 ampere is required to start the blower. This then instantly settles down to about 0.50 ampere, at high speed. With the 120-watt lamp in series the highest current at starting the motor is about 0.45 ampere, settling down to about 0.35 ampere. If the motor should accidentally become stopped and full current were left on it, 0.85 ampere would probably in a very short time result in burning out of the armature or field coils and possibly in vigorous combustion. With 0.45 ampere the danger of combustion is, we believe, almost eliminated. Meanwhile the operator has two distinct signals: first, the slight, though ever present and noticeable sound from the motor; second, the glowing of the filament of the external resistance lamp. With these two danger signals no operator fit to be trusted with human metabolism measurements should have difficulty in avoiding combustion.

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* Manufactured by the Hamilton-Beach Mfg. Co., Racine, Wis., designated as "Hair dryer No. 2."

Mouth-breathing Appliance. In the universal respiration apparatus[7] connection between the mouth and the closed circuit of air was made by the 3-way valve. This same procedure was followed with the portable apparatus, but the Emmes method of reading the portable apparatus makes it possible to conduct experiments without regard to the exact moment at which respiration begins and ends on the apparatus. This is true, however, only in the type of experiment in which oxygen alone is to be measured. Where carbon dioxide is to be measured, as in the original portable apparatus, the 3-way valve is necessary. With the new apparatus oxygen alone is determined.

From extensive correspondence it appears that practically the only use of the original "portable" respiration apparatus is for oxygen measurements, although, as shown by the comparison tests of Hendry, Carpenter, and Emmes,[8] the apparatus is perfectly satisfactory for the measurement of carbon dioxide. For the determination of oxygen alone it is possible to eliminate much of the somewhat cumbersome valve system and pipes formerly employed. A rubber tube, G,⅝ inch internal diameter, brings the air from the blower to a light metallic pipe to which the rubber mouthpiece, A, is attached, and the air is returned to the spirometer in a rubber tube, B, 1 inch inside in diameter. The stem of the rubber mouthpieces ordinarily used is long enough to be clasped between the thumb and finger to cut off the air current momentarily while filling up with oxygen; this stem can likewise be collapsed by a large spring clamp or can be placed in the mouth and collapsed by the teeth. The nose-clip[*] may then be attached and the subject begin respiring air from the apparatus at any time.

Supplementary Modifications. Although the most fundamental alterations pertain to the spirometer and soda-lime can and attachment of blower, we have added for the sake of convenience a light metallic frame or support for the spirometer and air circuit, and have adjusted all parts so as to be more or less collapsible and thus occupy minimum space and facilitate transportation. Figure 1 shows the supporting frame partly extended and with portions cut away. The spirometer is supported by means of four upright tubes (two shown), *c c*, which telescope inside of four tubes, *d d* (shown cut away). The rubber tubes B and G and mouthpiece, A, are supported by the arm, *j*, and the telescoping tubes *e* and *f*.

When the apparatus is in use the arm O supporting the pulley K is extended out of the tube P to such a height that the bell C can be filled to its fullest extent. The tubes *c c* which are attached to the cylindrical tank H H at *m m* are raised up out of the tubes *d d* to their full height and the tank H H engages four supporting plates *g g* by means of the knobs, *h h*. In order to bring the mouthpiece to a proper height and distant enough from the apparatus, the tube *e* is pulled out of *f* and a side arm *j* is screwed into the tee *k*. The ring *w* permits movement along the tube *j*. The tube *j* is shown broken in the figure. A movable ring *t* prevents the side arm *j* and the upright *e* from bending outwards due to the weight of the mouthpiece A and tubes B and C. Figure 2 is a photograph of the apparatus completely extended and ready for use.

When the apparatus is to be carried, the support O is telescoped into the tube P, the bell C is lowered into the tank H H. The supporting plates *g g* are disengaged from the knobs *h h*, rotated outwards, and the tank H H and the attached four tubes *c c* lowered until the supporting plates *g g* come above the knobs *u*. The supporting plates are then rotated inwards un-

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[*] Of the various types of nose-clip we have found that of Siebe-Gorman on the whole most satisfactory. (Supplied by H. N. Elmer, 1140 Monadnock Building, Chicago, Ill.)

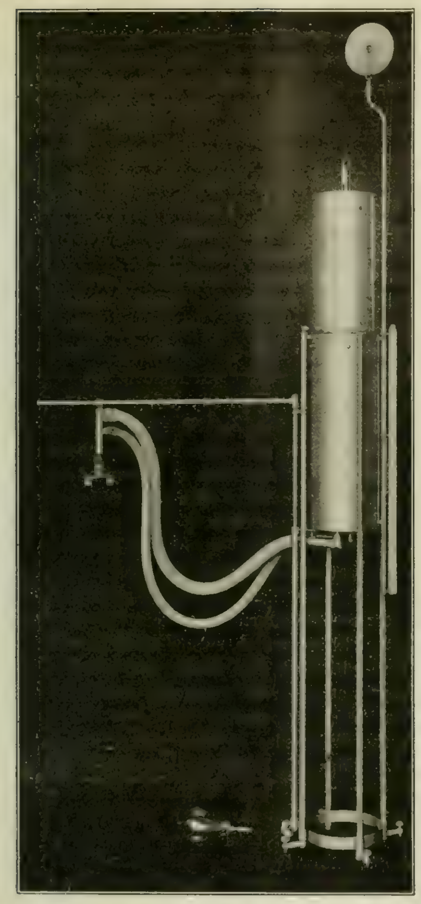

Fig. 2. Respiration Apparatus. The apparatus is shown here extended and ready for use. At the left are the mouthpiece and tubes; at the top, the bell, partly filled, and support above; at the right, the millimeter scale. Below is the electrical attachment and the framework for supporting the apparatus. The total height is 190 centimeters and the width at the base is 30 centimeters.

til they come above the knobs *u*. When the apparatus is picked up by a handle (not shown) attached to the upper ends of two of the tubes *e e* the knobs *u* engage in the four plates *g g* and thus the apparatus can be carried. The arm *j* supporting the rubber tubing can be unscrewed from the tee *k*, then rotated 90 degrees and telescoped inside of *e*, and *e* telescoped inside of *f*. A circular band *p* connects all four tubes *d d*. The screws *r r* permit levelling of the apparatus.

Oxygen Supply. With the practically universal medical use of oxygen in hospitals and the ever increasing industrial use of oxygen in nearly every well equipped garage and in most all machine shops, the supply of compressed oxygen is almost universally available. Where this is not the case, attention should be called to the fact that oxygen may be readily and easily prepared by the use of sodium-peroxide and water in apparatus not unlike the simple form of acetylene generator used in automobiles or motor cycles. One such device was mentioned in the description of the universal respiration apparatus.[19] Since practically the only impurity occurring in compressed oxygen, either of the medical or commercial type, is nitrogen and argon or very minute traces of hydrogen, it can be seen from a consideration of the method of measurement here used, namely, reduction in volume, that the purity of the oxygen plays absolutely no rôle.

Method of Use. While the reader is referred to the three earlier papers for the many details of the determination of the basal metabolism by means of the portable apparatus, the method of use of the new type may be briefly summarized as follows:

Half-hour period of complete repose on the part of the subject.

Attach stethoscope for pulse and record pulse during repose.

Oil blower and run it a moment or two before putting bell in place.

Test ventilating rate, as outlined in text of this paper.

Insert mouthpiece, shutting off connection to apparatus by fingers or by clip.

Fill apparatus with pure oxygen, starting from bell at lowest point.

Start blower.

Remove clip connecting mouthpiece to apparatus and attach nose-clip.

When respiration is regular take three initial readings of spirometer counterpoise position, temperature of bell, and exact times as outlined in a subsequent paragraph.

Read thermometer in bell.

After about 8 or 9 minutes repeat series of readings of spirometer position, temperature of air in bell, and time.

Take off nose-clip, stop motor, remove mouthpiece.

Method of Recording Data. In the original portable apparatus the use of a stop watch was recommended, and with the Emmes modified method three-stop watches were considered necessary. A simple and most satisfactory method for recording data has been worked out as follows. The operator uses his ordinary watch, on which, however, care has been taken to set the minute hand to agree reasonably well with the second hand. After the subject is connected with the respiration apparatus, the nose-clips applied, and the respiration has become regular, *i.e.*, within a few seconds, the operator notes the position of the pointer on the counterpoise at the end of three or four successive exhalations. Due to the continual absorption of oxygen the bell should fall slightly during each respiration, and consequently the counterpoise pointer steadily, though slightly, rises each time. The operator then immediately writes a final reading, for example, 378 mm., on a pad or tablet and, *after he has written this*, he instantly notes the position of the second hand, for example, 23 seconds, and records it. *Immediately* afterwards he carefully notes the positions of the minute and hour hands. While the reading of the scale of 378 mm. may not occur at, for example, the recorded 8 hours, 58 minutes, 23 seconds, but, more strictly speaking, did occur more nearly at 8 hours, 58 minutes, 13 seconds, owing to the latency of the time required to write down the figures 378 mm. and 23 seconds, nevertheless, we have found that the latency is practically the same for all records and since the periods are always from 9 to 14 minutes long and essentially the same degree of latency is noted at the beginning and end of each set of readings, no error is thereby introduced. This method has other distinct advantages in that one can in the final computations note the drop in the spirometer bell between the first and the last reading at the end of the test, or can make any arbitrary combination of readings for computation purposes. Thus one can use the two outside or first and last readings to give the longest period of experimenting, and the two inside readings to give the shortest, and note if there is any material difference between short and long experiments.

Physiological Tests of the New Apparatus. In presenting the original portable apparatus it was especially stated that it could not furnish results of the physiological importance that could be obtained with a complete respiration calorimeter, which yields simultaneously measurements of carbon-dioxide production, oxygen consumption, water vaporized, and direct heat production, or with a respiration chamber like the clinical cot chamber, which measures these first three factors but not the direct heat; and, indeed, it was not maintained that it could furnish as accurate results as the respiratory-valve apparatus. As a concession to rapidity of computation particularly, certain rule of thumb procedures were introduced. The truest proof of the practicability of the apparatus in measuring oxygen consumption and carbon-dioxide production of men was shown by an extensive series of well agreeing comparison tests made with a group of young men in Springfield, Mass.,[10] and more especially wit ha group of 17 medical students studied by Hendry, Carpenter, and Emmes.[11] Under the circumstances, therefore, we can assume that the original portable apparatus gives results, particularly for oxygen, fully as satisfactory as any of the older and more complicated types of respiration apparatus. It seems perfectly feasible, therefore, to compare the metabolism as measured on the new portable apparatus with that measured on the old, on the assumption that the old apparatus has been thoroughly tested. For this purpose several series of tests have been made in which the subject, in the post-absorptive state, was connected alternately with the new and with the old apparatus, two or three periods being run with each. In these tests, however, no attempt was made to weigh the soda-lime bottles in the old apparatus.

In the first series of tests with the new apparatus (May 26, 1920) the hair dryer was allowed to run at full speed, that is, with the full strength of current through it, and with a ventilation which has been shown to be over 100 liters per minute passing by the mouthpiece. The idea of this was to note any undue heating or even combustion. Owing to a misunderstanding on the part of the operator the readings on the spirometer were begun with the stop watch in the originally described method, and full advantage was not taken of the entire time the subject was breathing through the mouthpiece, since the three successive periods were started one after the other and each lasted about 10 to 12 minutes, while, as a matter of fact, the subject was actually breathing on the apparatus approximately 16 minutes. By the method of reading outlined above a 15 to 16-minute period could have easily been obtained.

We have, therefore, three intertwined periods in each series of tests, and the computation for each period is based upon the reading of the spirometer at a given time at the beginning of

Table 1.—Comparison of Measurements of Oxygen Consumption as Obtained with the New and the Old Portable Respiration Apparatus. (Subject, F. G. B., 49½ years, 76.0 kgs., 183 cm., May 26, 1920.)

Measurement	Period I (New)	Period II (Old)	Period III (New)	Period IV (Old)	Period V (New)	Period VI (New)	Period VII (Old)
	c.c.	c.c.	c.c.	c.c.	c.c.	c.c.	c.c.
a	231	228	——	232	231	229	228
b	237	227	228	230	225	227	244
c	240	230	223	234	230	229	239
Average	236	228	225	232	229	228	237
Pulse	63	61	61	58	57	56	57

a test and upon the reading at the end of the test, with the elapsed time noted on a stop watch. The entire comparison is shown in Table 1 with average values at the bottom. Period V and Period VI were run consecutively on the new apparatus. Of special interest is perhaps the agreement of the individual, intertwined periods among themselves. In Period I and Period VII the agreement is by no means as close as it is in the others. Theoretically one would expect that differences would be accounted for only by irregularity in respiration, which would cause a difference in reading of the spirometer level at different times. This again illustrates the fact that the entire method of studying gaseous metabolism with the portable respiration apparatus of either the old or the new type, indeed with the universal respiration apparatus, depends upon the legality of the assumption that the residual volume of air in the lungs is the same at the end of each normal respiration, a fact that we believe has been amply proved by the study of the innumerable graphic tracings and records taken in connection with experiments of this type in this laboratory.[12] But what is of most importance in this particular study is the comparison of the average results between the new and the old apparatus.

The average values for the three series on the old apparatus give an average oxygen consumption of 232 c.c. per minute. The average of the four values on the new apparatus gives an oxygen consumption of 230 c.c. We have every reason to believe that the average value obtained in the first series with the new apparatus is slightly high, owing to the fact that complete muscular repose had not been obtained, and that the average value for the seventh series is likewise probably high, owing to slight discomfort resulting from the unusually long series of tests. In any event the comparison shows very satisfactory agreement. The average pulse for each period is likewise given in the table and shows a slight tendency to fall off throughout the day.

The method of computing employed in connection with the old portable apparatus was used without any modification, namely, the difference in the spirometer bell readings was assumed to be the contraction in volume, and the temperature in the spirometer bell read at the beginning and end of the experiment was averaged, the barometer was recorded, and this contraction in volume reduced to 0° and 760 mm. by the usual method. There was then applied a small empirical correction of 1 c.c. per minute for each degree (Fahrenheit) rise in temperature of the bell.* In the development of this method of computation, as presented in the description of the original apparatus, concessions were freely made to rapidity of calculation and a certain degree of empiricism was allowed to enter. Theoretically, one might consider it more logical to reduce the volume of air in the old apparatus at the beginning of the test to 0° and 760 mm. and reduce it likewise at the end of the test to 0° and 760 mm., and consider the difference as the oxygen absorbed. One great practical difficulty enters into this, both with the old portable apparatus and even more so with the new, namely, the fact that inside of the air current there is a very widely different temperature gradient. There is the heat of the motor, the cooling effect of the water vaporized from the walls of the spirometer bell as it rises and falls, the liberation of heat as the water vapor and carbon dioxide are absorbed by soda-lime and the obvious cooling effect of the room air as the air passes through the several pipes. To secure an average temperature of this system is extremely

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* Thus far we have not been able to secure a satisfactory light weight, recording thermometer to replace the Fahrenheit.

Table 2.—Comparison of Measurements of Oxygen Consumption as Obtained with the New and the Old Portable Respiration Apparatus. (Subject, F. G. B., June 1, 1920.)

Period No. and apparatus	Measurement	Pulse rate	Observer I		Observer II	
			Length of period	Oxygen per min.	Length of period	Oxygen per min.
			mins.	c.c.	mins.	c.c.
I (New)	a	----	9.82	247	9.97	246
	b	----	9.50	245	9.67	246
	c	----	9.18	241	9.25	242
	Average	67	----	244	----	245
II (New)	a	----	9.22	237	10.33	238
	b	----	9.55	232	10.53	236
	c	----	9.16	238	10.30	234
	Average	53	----	236	-----	236
III (New)	a	----	9.07	240	13.25	240
	b	----	9.05	235	10.08	234
	c	----	8.83	236	6.60	235
	Average	60	----	237	-----	236
IV (Old)	a	----	11.95	236	13.08	239
	b	----	9.13	233	10.12	235
	c	----	6.20	235	7.07	230
	Average	60	-----	235	-----	235
V (Old)	a	----	12.43	237	13.22	237
	b	----	9.70	232	10.70	232
	c	----	6.32	236	7.50	233
	Average	62	-----	235	-----	234
VI (Old)	a	----	11.95	239	12.90	243
	b	----	9.02	237	10.00	238
	c	----	6.35	237	7.23	239
	Average	60	-----	238	-----	240
VII (New)	a	----	12.15	244	13.23	242
	b	----	8.95	230	10.10	235
	c	----	5.73	227	6.70	229
	Average	61	-----	234	-----	235
VIII (New)	a	----	12.97	224	13.25	244
	b	----	8.42	238	9.38	241
	c	----	4.80	240	5.54	259
	Average	61	-----	234	-----	248

difficult and would be a practical impossibility for clinicians, and would enormously complicate their method of computation. We wish to caution any who feel tempted to study the "constants" of this apparatus, for we have spent many hours on the same problems and have come to the conclusion that the practical difficulties in the way of exact temperature measurement at all points of the apparatus, with a proper method of averaging, are such as to rule it out from use. Since this apparatus is primarily for the practical purpose of measuring the oxygen consumption alone of patients in the hospital and since by this method of computation the apparatus, the old apparatus at least, has shown astonishing agreement with the other accepted forms of studying respiratory exchange, we believe that the empirical rules laid down for these calculations are just.

The keen critic may very properly take the ground that in the comparison experiments made by Hendry, Carpenter, and Emmes, where the old portable apparatus was compared with the respiratory valve apparatus, one factor was not sufficiently controlled, that is, the effect of *consecutive* periods. With the portable apparatus during the first period there is considerable warming up of the motor, and the warming of the soda-lime, due to the absorption of carbon dioxide and water vapor. In the comparison tests referred to one experiment was made. There was then a considerable period of time, a half hour or more, while a test with another type of apparatus was made, and not until then was there a return to the original apparatus, during which time there would obviously be a considerable cooling. On the other hand, in practical experience the portable apparatus is invariably used for successive periods and hence it seemed necessary to conduct a test so that a number of repeated periods could be compared. It was this thought that stipulated Series V and VI in Table I, and it is of great interest to note there that the average results from the two series are 229 and 228 c.c., respectively. Still, the importance of this point and the necessity for still further checking the new apparatus led to a second series of physiological tests on the same subject a few days later.

In this test the order was as follows. There were first three periods of approximately 15 minutes each on the new apparatus and then three on the old apparatus, and finally two on the new apparatus. A 120-watt lamp in series with the hair dryer was used in this and the subsequent series with the new apparatus. In this series of tests two different observers were employed and the reading of the pointer on the counterpoise weight at the beginning of each test noted on the ordinary watch, as described above. The results are recorded in Table 2.

This table shows not only the comparison between the results obtained on the new and old portable apparatus but likewise shows the agreement in observations between two different observers, and it is deemed of importance to indicate here the length of period, to show what differences may be expected in short periods compared to long periods. With regard to the first comparison, namely, the values between the new and old apparatus, it can be seen that the same degree of uniformity shown in the first series of tests given in Table 1, obtains here. and it may properly be said that the new apparatus gives results for oxygen consumption in perfect accord with the old portable apparatus. The agreement between the different observers is also all that could be expected.

When the averages alone are considered, it is seen that only in period VIII is there a difference of over 2 c.c. per minute. The irregularities in period VIII appear for the most part to be in record *a* with observer I and in record *c* with observer II. No satisfactory explanation is at hand. In general the values are essentially the same, irrespective of the length of period, although theoretically, at least, the longer the experiment the more reliable the result. The pulse rate shows also high values in the first period, which are reflected by the somewhat higher oxygen consumption. The average values, as a whole, after the first period, are slightly above those noted on May 26, given in Table I. The nude body weight was not recorded on June 1, but was probably not far from that of May 26, *i.e.*, 76 kilograms.

In the development of this final form of portable respiration apparatus we have been much assisted by the keen criticism of Dr. Thorne M. Carpenter of the Nutrition Laboratory staff. whose wholly unusual experience with the various forms of respiration apparatus makes his requirements especially strict. Dr. Carpenter kindly pointed out that any basic error in the new apparatus might, to a certain extent, be overmasked by the large oxygen consumption

TABLE 3.—COMPARISON OF MEASUREMENTS OF OXYGEN CONSUMPTION AS OBTAINED WITH THE NEW AND THE OLD PORTABLE RESPIRATION APPARATUS. (SUBJECT, T. M. C., 42 YRS., 48.0 KGS., 165 CMS., JUNE 3, 1920.)

Measurement	New apparatus						Old apparatus			
	Period I		Period II		Period III		Period IV		Period V	
	Duration	Oxygen per min.	Duration	Oxygen per min.	Duration	Oxygen per min.	Duration	Oxygen per min.	Duration	Oxygen per min.
	mins.	c.c.	mins.	c.c.	mins.	c.c.	mins.	c.c.	mins.	c.c.
a	14.73	176	14.05	173	11.60	171	14.05	167	13.45	169
b	11.53	173	11.63	171	9.45	169	10.30	167	10.00	168
c	8.37	170	8.97	172	6.97	170	7.13	165	7.00	166
Average	-----	173	-----	172	-----	170	-----	166	-----	168
Pulse	-----	71	-----	68	-----	65	-----	62	-----	61

of the subject used in Tables 1 and 2, and that the comparison between the two types of apparatus might best be made with a subject having considerably smaller oxygen consumption. He kindly consented to serve as subject in the post-absorptive condition for another set of comparisons, the details of which are given in Table 3. Three consecutive periods on the new apparatus were followed by two periods on the old apparatus. Making allowances for the difference in time after lying down and the difference in pulse rate, it is seen that the agreement between the two forms of apparatus is all that could be expected. The agreement between the separate records, *a, b, c,* of each period is even closer than that recorded in the other tables. Rarely is there a difference of 6 c.c. and in all except the first period the extreme difference was 3 c.c. Both subjects found no difference in the ease of respiration or sensations on the two forms of apparatus.

Summary. To fill urgent clinical needs the portable respiration apparatus has been modified, reduced in weight, and provided with support and stand so as to make it a strictly portable apparatus. Without gas analysis, without weighings of any kind, the oxygen consumption of patients may be studied by this apparatus in the customary 10 to 15 minute periods, with an accuracy fully equal to other standard methods of studying respiratory exchange. A simple method of timing the readings of the position of the spirometer bell eliminates the use of stop watches. Three series of comparison tests on two different subjects with widely varying basal oxygen requirements show that the most satisfactory results can be obtained.

As we go to press Dr. Paul Roth of the Battle Creek Sanitarium writes us that he has tested one of the new forms of apparatus there and for ease of manipulation and accuracy of measurements finds it most satisfactory.

REFERENCES.

[1] Benedict and Tompkins: BOSTON MEDICAL AND SURGICAL JOURNAL, 1916, 174, pp. 857, 898, and 939.
[2] Benedict: BOSTON MEDICAL AND SURGICAL JOURNAL, 1918, 178, p. 667.
[3] Hendry, Carpenter, and Emmes: BOSTON MEDICAL AND SURGICAL JOURNAL, 1919, 181, pp. 285, 334, and 368.
[4] Benedict: BOSTON MEDICAL AND SURGICAL JOURNAL, 1920, 182, p. 243.
[5] Benedict and Higgins: Am. Jour. Physiol., 1911, 28, p. 1.
[6] Benedict: BOSTON MEDICAL AND SURGICAL JOURNAL, 1920, 182, p. 243.
[7] Benedict: Am. Jour. Physiol., 1909, 24 p. 372; Ibid.: Deutsch. Arch. f. Klin. Med., 1912, 107, p. 156.
[8] Hendry, Carpenter, and Emmes: BOSTON MEDICAL AND SURGICAL JOURNAL, 1919, 181, pp. 285, 334, and 368.
[9] Benedict: Am. Jour. Physiol., 1909, 24, p. 372.
[10] Benedict, Miles, Roth, and Smith: Carnegie Inst. Wash. Pub. No. 280, 1919.
[11] Hendry, Carpenter, and Emmes: BOSTON MEDICAL AND SURGICAL JOURNAL, 1919, 181, pp. 285, 334, and 368.
[12] Carpenter: Carnegie Inst. Wash. Pub. No. 216, 1915.

ORCHITIS IN MUMPS.

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[From the Evans Memorial Hospital, Boston.]

(Continued from page 430.)

ORCHITIS PRECEDING PAROTITIS.

A number of cases are on record where—during a mumps epidemic—orchitis has preceded parotitis by one to nine days. A striking case of this kind is described by Torpey,[47] in which a young man of eighteen was taken on December 13, 1910, with a left orchitis, which was followed in six days by a right orchitis. Several days later, while recovering from the orchitis, and when much improved, he developed a bilateral parotitis typical of mumps then epidemic in the locality. Gonorrhea as a cause of the orchitis was ruled out. Complete recovery followed. Feiling[48] reports a case of double epididymitis preceding double orchitis, which was followed in four to six days respectively from the onset in the two testicles by involvement of the submaxillary glands, the parotids remaining unaffected. In the case reported by Neumann[49] the parotitis followed six days after the orchitis. In the four cases of Edwards[50] the parotitis followed the orchitis in two to three days, and in the case of Burnett[51] in one day.* I have collected 30 cases of this variety of mumps from th literature. (See Table III.)

TABLE III.

PRIMARY TESTICULAR MUMPS.

AUTHOR	REFERENCE	NO. OF CASES
Boyer	cited by 1	7
Vidal	" " 1	3
Bussard	" " 1	2
Plagneux	" " 1	4
Crevoisier	" " 52	1
Jourdan	32	2
Ribierre	53	1
Torpey	47	1
Neumann	49	1
Feiling	48	1
Rizet	38	1
Waddelow	54	1
Edwards	50	4
Burnett	51	1
TOTAL		30

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* I recall a case from my own experience, where a soldier showed a mild unilateral orchitis preceding a swelling of the submaxillary glands without fever. The diagnosis of mumps was considered at the time but not established, and the man remained on full duty. There was a remote possibility of exposure, but no other cases of mumps developed. It seemed doubtful at the time that venereal disease could be present, but a history of slight trauma to the testicle two days before the onset was given. It is possible that the trauma merely called attention to the orchitis, which may have been of mumps origin. However, I made no diagnosis at the time, and I do not feel justified in including this case as a good example of this type.

ORCHITIS WITHOUT PAROTITIS.

During epidemics of mumps, cases of orchitis occur without any apparent preceding or subsequent involvement of the parotid or other salivary glands, and where all possibility of venereal disease or trauma can be excluded. In these cases the course of orchitis is comparatively mild. It is possible that the involvement of the salivary glands may be so mild as to escape detection. This is suggested in Hamersley's[43] report on the epidemic in the prison of New York in 1821, where out of 80 cases of mumps there were 17 cases of orchitis, six of whom showed no signs of parotitis, and also in Heller's report of the epidemic at Danzig in 1876, where among 26 cases of testicular mumps in soldiers only 10 showed parotid involvement. Comby* cites numerous epidemics where orchitis without parotitis was a common occurrence. Other reports of carefully studied cases, however, tend to exclude the necessity of parotid involvement, and lead one to believe that mumps may manifest itself solely in the testicle. The following table gives an idea of the frequency of this type of mumps. I have been able to collect 64 such cases from the literature. (See Table IV.)

TABLE IV.

TESTICULAR MUMPS WITHOUT INVOLVEMENT OF THE SALIVARY GLAND.

AUTHOR	REFERENCE	NO OF CASES
Chauvin	31	1
Jourdan	32	1
Fournie	35	1
Servier	26	1
Jacob	52	3
Grasset	55	1
Sorel	56	3
Hammersley	43	6
Lauterbach	57	1
Luzzathi	58	2
Helber*	39	3
Kovacs	59	2
Aronson	60	1
Heller	61	16
Debize	Cited by 52	1
Levi	" " 59	4
Boyer	" " 1†	5
Vidal	" " 1	5
Malabouche	" " 1	4
Jobard	" " 1	2
Resiguer	" " 1	1
TOTAL		64

* The three cases cited by this author were collected from the Sanitätsberichten from 1890 to 1906.
† Comby[1] op. cit., p. 119.

CLINICAL ASPECTS OF ORCHITIS.

In the majority of cases the orchitis appears about three to seven days after the height of the parotitis, but it may come on before, during, or in the third week[62] after the onset of the parotitis. It is frequently ushered in with a chill and a sharp rise of temperature, with headache and pronounced weakness. Nausea, vomiting and diarrhea may ensue, and even delirium. The patient complains of pain in the testicle, which may range from a slight discomfort and sensation of heaviness to the most intense pain radiating to the thigh, inguinal, or sacroiliac region, and even into the abdomen as a shifting dull ache. The rapidity of the swelling intensifies the pain, which I have frequently heard described as "unbearable." Here the faces becomes characteristic of a most intense agony, with an anxious, staring expression, accompanied by a hectic look of the cheeks in contrast to the pallor of the rest of the face. The patient groans and appears restless, yet he hardly moves a muscle if he can help it.

In the course of one to three days the testicle may be found to be two to four times its original size, usually of a firm consistency and very sensitive to the touch. Tenderness of the glands on palpation is most marked in those cases where the patient complains of severe pain before the examination is made. The epididymis may be found to be involved, and likewise the spermatic cord, as manifested by swelling and tenderness.* A hydrocele often develops with the epididymitis, but rarely to the degree met with in other conditions. The skin of the scrotum frequently becomes red, oedematous, and sometimes exceedingly tender to the touch. In one case gangrene of the scrotum is reported to have taken place.†

When prostatitis is present, we may have a urethral discharge varying from an opaque to a yellowish appearance not unlike that of gonorrhea. The smears are free from organisms, and the discharge lasts only about two days.

When the temperature stays up around 104 for more than twenty-four hours, symptoms of meningismus or encephalitis may develop. In fact, delirium may come on even earlier than this and may persist for several days, particularly, as we have already remarked, if the orchitis accompanies a double parotitis.‡ In bilateral orchitis the second testicle usually follows the first, as I have already stated, in from three to nine days, generally between the sixth and eighth day after the first. When both testicles become affected at the same time, the constitutional symptoms are usually increased, more especially the feeling of general weakness; but the simultaneous involvement of both testicles is very rare.

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* Op. cit., p. 119.

* The epididymitis may precede or follow the orchitis, but more often it precedes. Several authors have remarked on the fact that the tenderness of the epididymis is not so great as when the condition is of gonorrheal origin.

† Ravaton, 1877, cited by Schottmüller[8], op. cit., p. 49.

The swelling of the testicle begins to go down between the third and sixth day after the onset, and has disappeared at the end of another five to seven days. In very mild cases the patient may be conscious of the condition merely by the sensation of weight in the affected testicle.

An interesting complication is orchitis in an undescended testicle. I have come across two such cases in the literature. In the first, described by Mitchell,[63] a negro, aged 33, was seized with a most intense pain in the left lower quadrant of the abdomen one week after a mumps parotitis. He was found to be in an acute delirium, and resisted attempts at examination in a maniacal fashion by striking, biting, and spitting. The left rectus was rigid and apparently tender to pressure. The left testicle was absent from the scrotum. Examination of the left inguinal canal was resisted by the patient, while no objection was made to inserting the finger in the right canal. One-half grain of morphia gave relief, and the next day the patient was found much improved. Orchitis had developed in the undescended testicle. The second case, reported by Ross,[64] was in a boy of fourteen. The patient complained of severe pain in the right inguinal region following a mumps parotitis. Examination revealed that the right testicle was retained in the inguinal canal, and manipulation caused the pain to extend into Scarpa's triangle. As there was no improvement at the end of fourteen days, the retained testicle was removed by operation, and was found to show "all the signs of acute inflammation on microscopical examination." It is a pity that the histology of this gland is not described, because it is exceedingly interesting that a retained testicle should be involved, inasmuch as testicles are usually atrophied when found in this position. We might speculate that the atrophy in this case had not preceded the arrival of puberty.

PATHOLOGY.

The pathology of acute orchitis in mumps consists of a more or less rapidly appearing serous exudate in the septa and lobules of the testis.[14] This condition spreads to the tunica vaginalis, where the tension, if suddenly exerted, gives rise to the intense pain. From here it may extend to the skin of the scrotum, giving rise to a definite redness and swelling. As already stated, the epididymis may become involved before or after the testicle, and an acute hydrocele may develop. Even the vas deferens may become congested by itself or as a part of the general inflammation of the gland.*

Wollestein[66] injected the salivary filtrate of acute mumps cases into the testes of young cats, with the result that after an incubation period of six to seven days, an orchitis was set up, giving rise to histological changes "consisting of degeneration of the epithelium and interference with spermatogenesis." "Atrophy of the inoculated testicle occurred in several of the cats, after the acute symptoms had abated."

An excellent picture of the gross pathology is given by Smith,[67] who operated on the acute case of orchitis occurring eight days after the onset of a bilateral parotitis epidemica.

> "Operation—2-inch vertical incision along anterior aspect of left scrotum. Tunica vaginalis opened with escape of about one ounce of turbid yellow fluid from which a culture was made. The testicle was delivered through the incision. It was three times the size of a normal testicle, firm and elastic on palpation. The color was more bluish than is usual, and throughout the tunica albuginea were scattered many minute reddish specks, probably punctate hemorrhages. The epididymis was definitely enlarged, soft, without induration, and of a deep red color which at the globus major became almost black. It was the picture of intense acute congestion. The cord was somewhat edematous, the vas normal . . . . "

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‡ The case of double epididymitis and double parotitis described by Phillips, in which there was recurrent delirium, high fever, and, later, stupor, with retention of urine with cord, less involvement, suggests orchitis rather than merely epididymitis, particularly as he refers to Mitchell's case of orchitis as an epididymitis (Phillips, S.: "Note on a case of mumps in which attacks of epididymitis occurred on each side in turn, each attack being accompanied by symptoms profoundly involving the nervous system." Lancet, London, Jan. 7, 1911, i, p. 23.)

* The inguinal glands frequently become involved, just as cervical adenitis is apt to result from parotitis. The lymph nodes merely enlarge temporarily with more or less tenderness. Suppuration rarely follows, and if so, is the result of a secondary infection. Haden[65] had occasion to examine sections of an inguinal gland which enlarged after a mumps orchitis. The pathological picture was similar to that found in a tubercular infection. A Gram-positive diplococcus was isolated which the author considers to be the causative factor in mumps.

A small piece of testicle tissue from another case of double orchitis was submitted to Dr. S. B. Wolbach,* who gives the following report on his microscopical findings of the stained sections:

"The process does not affect the testicle tissue uniformly. There are groups of seminiferous (convoluted) tubules which are completely destroyed and distended with exudate, separated by areas of normal and slightly affected tubules which contain large numbers of mitotic sexual cells, though few mature spermatozoa.

"The exudate in the destroyed tubules consists chiefly of polymorphonuclear leucocytes and phagocytic endothelial leucocytes. The cells of the tubules have mostly undergone a hyaline degeneration and are taken up by phagocytic endothelial leucocytes, though there are occasional perfectly preserved mitotic sexual cells scattered among the tightly packed exudative cells.

"The intertubular connective tissue everywhere is edematous and between the tubules most affected contains coarse, meshed fibrin, small areas of hemorrhage, and many polymorphonuclear and endothelial leucocytes.

"Among the groups of least affected tubules there are some with normal epithelium, but with lumina partly filled with polymorphonuclear and endothelial leucocytes, as if the process were spreading among the lumina.

"There are many more tubules, however, which show lesions involving a small portion of the circumference, where it appears as if the process were extending from the intertubular connective tissue. In these places numerous leucocytes are found in the act of migrating through the basement membrane of the tubules. These small lesions contain deeply staining hyaline degenerated sexual cells, hyaline fragments, polymorphonuclear leucocytes and endothelial leucocytes. The immediately adjacent epithelium is usually full of mitotic sexual cells showing the various stages of spermatogenesis.

"The tunica albuginea is edematous, and there are small hemorrhages and zones of cellular exudate about blood vessels. The cells about blood vessels are polymorphonuclear leucocytes and endothelial leucocytes.

"Mitotic endothelial cells in the lumina of capillaries occur in the tunica albuginea and intertubular connective tissue.

"Liquefaction necrosis is not present either in the tubules or in the connective structures.

"No bacteria or other parasites can be found in the sections and in film preparations made at the time of the operation. Ordinary stain, Gram's stain, and Giemsa's stain were employed."

(To be continued.)

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* Wolbach's report included by Smith, *op. cit.*, p. 324.

NOTES FROM THE EAR, NOSE, AND THROAT SERVICE, PROVISIONAL BASE HOSPITAL NO. 1, BAZOILLES-SUR-MEUSE, FRANCE.

By H. H. Amsden, M.D., Concord, N. H.

The data for this paper were collected during the winter of 1918-1919, at a Base Hospital at Bazoilles-sur-Meuse, which is about seven kilometres south of Neufchateau, in the Department of the Vosges. In this section there is a very high degree of humidity during the winter months, which was especially conducive to catarrhal affections of the respiratory mucous membranes. The cases treated were chiefly those which would be seen in a civilian clinic, the only ones directly attributable to battle casualties being the chronic gas cases. Disability classification formed an important part of the medical work; observations made and deductions drawn were of the greatest interest and value, in determining the relations between lesions of the upper respiratory tract and physical fitness. The effect of climatic conditions upon these diseases was so marked that a special classification was provided for cases needing treatment in a warmer, drier climate; most of them were evacuated to Southern France.

SINUSITIS.

One of the most prevalent affections was acute catarrhal sinusitis; practically every case showed a high deviation of the septum, with consequent interference with the drainage of the sinuses. The compensatory turbinal hypertrophy which generally accompanies this condition was apparently less important as a causative factor, the sinusitis being more marked on the side of the deviation. About 75% of the deviations were to the right. Non-operative treatment by means of sprays and suction was sufficient to relieve a very large proportion temporarily, but it was found that most of them would relapse if returned to duty, and report back to the clinic in a few days with all the symptoms of headache, nasal obstruction, etc. The opportunity afforded by a very competent x-ray department to have any case radiographed when desired was of great assistance in correctly diagnosing the sinus cases.

Before being ordered to Bazoilles I was regimental surgeon for several weeks at Camp Montierchaume, in the Department of the Indre. The equipment for work here was most meagre;

not much of anything but C.C. pills and tincture of iodine. Acute affections of the respiratory tract formed a large part of the work at sick-call, and in treating acute rhinitis, sinusitis, tubo-tympanic catarrh, naso-pharyngitis, etc., instillation of 25% argyrol solution into the nostrils with a pipette or medicine dropper proved very effective, much more thorough than spraying, or swabbing the naso-pharynx through the mouth.

ACUTE SUPPURATIVE OTITIS MEDIA.

A few of these cases were primary or following acute rhinitis; more frequently they were complications of influenza, pneumonia, scarlet fever or diphtheria. In a series of fifty cases of typhoid, 20% developed O.M.S.A. In the cases occurring during convalescence or when the patient's mental condition permitted him to call attention to symptoms, pain, deafness, and local tenderness were complained of; in the acute stage of typhoid spontaneous rupture was generally the first symptom. Cessation of these complications followed daily instillation of 20% argyrol solution into the nostrils of all the typhoids. In the acute middle ears complicating acute infectious diseases, early paracentesis, followed by dry wicks or 10% phenolglycerin, was the treatment of choice. The primary cases were frequently aborted by use of 50% ichthyol-glycerin or 10% phenol-glycerin. Instillation of Dakin's solution was tried in some of the acute otitides mediae, but the results were not as satisfactory as irrigation, or phenol-glycerin, and the patients almost always complained of considerable pain following its use.

CHRONIC SUPPURATIVE OTITIS MEDIA.

The relatively large number of these cases, most of which obviously existed prior to enlistment (E. P. T. E.), demonstrates two facts: (1) the aural examination of recruits was not sufficiently thorough; (2) chronic suppurative lesions of the middle ear are of greater importance as a potential cause of disability than some other defects upon which greater stress is laid, *e.g.*, a soldier with a flat foot may be perfectly fit for active service, except marching, and be able to withstand all sorts of hardship and exposure, while the possessor of a chronic discharging ear is subject to acute exacerbations from infection and may at any time develop a mastoiditis. The usual palliative treatment produced much improvement, but like the cases of sinusitis, climatic conditions caused frequent relapses and exacerbations. A considerable number of the cases under treatment gave a history of having spent most of their time while in France in hospital or infirmary, on account of ear trouble.

CHRONIC TONSILLITIS.

These cases were of interest principally as carriers. Several cases showing positive K-L for several weeks after all clinical symptoms had disappeared were cleared up only after tonsillectomy, and the same was true of meningitis carriers. There were very few cases showing symptoms of focal infection which were attributable to diseased tonsils.

VINCENT'S ANGINA.

This disease presented three clinical types, not by any means always distinct, as many of the cases showed dental lesions, either catarrhal or ulcerative. (1) Ulcerative form; ulcers chiefly on tonsils and pillars, with sloughing, some odor and adenitis. (2) Catarrhal form; inflammation of fauces, palate and pharynx, with dysphagia and no ulceration. (3) Dental form; infection around roots of teeth, with ulceration; the most intractable, as reinfection is very frequent and dental treatment absolutely necessary. Several of these cases were treated with diarsenobenzol intravenously, but the results were not as marked as in cases in civilian practice treated with salvarsan.

The local treatment most successfully adopted was as follows: (1) cauterization of ulcers with 25% trichloracetic acid; (2) gargle four times daily with 2% acetic acid solution; (3) brush teeth four times daily, use in rotation one-half dozen tooth brushes, kept soaking in 10% potassium chlorate solution.*

A bacteriological examination of the mouths and throats of the medical staff and nurses of the hospital showed the presence of the spirillum and fusiform bacillus in all but two of the doctors and four of the nurses, none of whom showed clinical symptoms of disease.

CHRONIC LARYNGITIS.

Several cases caused by inhalation of poison gas were treated. The clinical picture was much the same in every case; redness and thickening of the vocal cords, faulty approximation, stringy mucus between the cords, aphonia or dysphonia. These cases were particularly susceptible to adverse climatic conditions, and their future history as to ultimate cure, development of tuberculosis, etc., will be of great interest.

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* The technic for this treatment was suggested by Capt. Eller, U. S. Dental Corps.

Among the rarer cases of interest were two of facial paralysis of dental origin which promptly cleared up on extraction of the offending teeth.

Owing to orders forbidding operations except of urgent necessity, and also to the very limited instrumentarium provided, many cases of chronic sinusitis, septal deviations, chronic tonsillitis, etc., which would have been operated in a civilian hospital, were evacuated untreated, after having been held for weeks in the wards; many of them would have cleared up much sooner following operative treatment. Mention may be made here of the very inadequate set of instruments provided for ear, nose, and throat work. I do not know who was responsible for their selection, but a set of this sort which does not contain a nasal snare, ring probe or curette, or a mastoid rongeur, is certainly far from complete and anyone who has ever tried to get any extras from a medical supply officer can easily imagine the difficulties to be encountered in this direction. About the only way the necessary instruments could be secured was through the Red Cross, or by direct purchase from Paris.

Physicians who pay special attention to otology and rhinology have long realized the intimate relation between certain diseases of the nose and throat, and local and systemic diseases arising therefrom; this relation has apparently not been observed to so great an extent in the standards set up by the army for the examination of recruits. Of all defects existing prior to enlistment, next to flat foot, chronic obstructive and inflammatory disorders of the ear, nose and throat were the most common cause of physical disability in the soldier. The examination of the ear, nose and throat, both by the draft boards and in the camps, was more superficial than any other part of the examination, except possibly that of the renal functions. If the recruit's hearing was up to standard, and there were no gross obstructive or inflammatory lesions present, he was passed as fit, and thereby many cases of chronic tonsillitis, otitis media, sinusitis, etc., were accepted. Under climatic and living conditions in France these were a frequent cause of physical disability unfitting the soldier for active service.

In the disability classification by the ear, nose and throat service at the Base Hospital, more cases of O. M. S. C. were given a surgeon's certificate of disability (S. C. D.) than any other class of cases. A very large per cent. of these obviously existed prior to enlistment, and were so classified, yet in claims for compensation it will be very difficult to establish this fact, and many of these cases will be awarded compensation for conditions which were doubtless made worse by military service, yet which existed prior to enlistment. Such cases should either have been classified before being accepted, and have received treatment, or have been refused as physically unfit. The adoption of more rigid standards for ear, nose and throat examinations by recruiting boards, life insurance examiners, etc., will result in the elimination of many of the physically unfit from military service and as life insurance risks.

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AN IMPROVED METHOD IN THE TREATMENT OF OTITIS EXTERNA.

By Jospeh Prenn, M.D., Boston.

The tube leading to the membrana tympani is the external auditory canal. It consists of two parts: a smaller one, anteriorly: the cartilaginous meatus; and a larger one, posteriorly: the osseous meatus. The entire canal is covered with skin continuous with that of the auricle and extending inward to the outer layer of the membrana tympani. This skin is strongly adherent to the perichondrium and periosteum of the canal respectively.

A simple inflammation may be set up in any part or the whole of the canal through irritation by chemicals. The infection, however, of the external auditory meatus, usually called furunculosis of the canal, takes place through the hair follicles and has its origin, as a rule, in the cartilaginous meatus, though occasionally we encounter a case which is entirely confined to some part of the osseous meatus.

Although we classify this condition as furunculosis on account of its etiology, clinically it presents a different picture and runs an entirely different course. We very seldom see here a furuncle coming to a head, unless in the superior part of the canal where the cartilage is wanting. There is no give to the skin of the canal; it is strongly adherent.

Occasionally we meet with a cycle of infection as in other parts of the body. This is especially true in people with a furuncular diathesis. Various parts of the canal will be infected in consecutive order. Recently a case like this came under my care in a patient with furuncular diathesis whose canal went through the cycle of infection, starting with a furuncle superiorly that came to a head, and after the entire canal was healed, the tragus of the same ear became infected. As a rule, however, the infection from the start is confined either to one part or, if severe or when it has taken place in different parts simultaneously, to the entire canal.

Subjectively the patient experiences pain, which is sometimes excruciating. He feels it especially when the condyle of the lower jaws bears pressure on the external canal, as in eating. He cannot stand any pressure or traction of auricle at all, and of course cannot lie on the affected side. The patient experiences difficulty in hearing and complains of a sense of fullness and becomes irritable.

Objectively there are an infiltration and edema of varying degree to complete closure of canal. The drum membrane may become thickened and red, but not bulging, due to the extension to the outer layer of the drum membrane from the canal, and it clears up with the latter. By extension from the canal a post-auricular abscess may form in children when the infection is posteriorly, or infection of parotid through the fissures of Santorini when the infection is anteriorly. There may be a cellulitis of the neck downward.

Treatment. When the inflammation is slight, heat and medicinal applications may effect a cure. Various medicines are being used by different men, but solution aluminum subacetate properly prepared and properly and gently applied, gives very good results. When pus is present, we make deep incisions to obtain pus. Twenty-four hours after the operation, we insert a gauze strip soaked in the above solution into the canal, and the patient keeps same moist with the solution by means of a medicine dropper. The dressing is changed daily for a few days. When there is marked edema, especially when the entire canal is involved, incisions are made on all sides of the canal under general anesthesia, followed by the application of heat and in twenty-four hours by the above solution.

The question of the kind of heat is important. Since the patient cannot stand any pressure, the difficulty of applying different poultices and holding them there is obvious. Especially difficult is it on lying down. He cannot lie with his sick ear on the poultice, neither can he stand the poultice resting on his ear. The poultice cools off readily, and that is another disadvantage. It is certainly uncomfortable, to say the least; it retards the healing, and it adds a great deal to his already taxed nervous condition.

The writer, therefore, found the use of the electric bulbs 50-100 candle power very beneficial. The patient can sit with the sick ear turned to the lamp, or lie on his good side with the lamp lowered from a flexible or folding stand with a shade over it bent right over his sick ear, and get the benefit of a uniform heat.

INSTITUTIONAL DENTISTRY: RESULTS. REPORT NO. 4.

By Frederick A. Keyes, D.M.D., Boston.

In the Boston Medical and Surgical Journal of July 25, 1912, I submitted my first report on institutional dental work in its relation to the infectious diseases of childhood. This report was followed by others with statistics up to 1916. These were the first statistics to definitely demonstrate the causal relationship of bad teeth to the general health of the child. Through the courtesy of the present visiting dentist, Dr. Jos. V. Lyons, and the visiting physician, Dr. N. A. Drummey, I have been able to bring the statistics of this particular institution up to date. The table includes all diseases for the 13-year period 1907-1920 at St. Vincent's Orphanage, Boston. The amount of dental work done during that time has, of course, been enormous; but to publish the various numbers of extractions, etc., would be of no scientific importance. Enough to comment that the dental work is being very carefully and effectively done. The statistics follow:

	1907–1908	1908–1909	1909 – Nov., 1910	Nov., 1910 Apr., 1911	Apr., 1911 May, 1912	May, 1912 May, 1913	May, 1913 Nov., 1913	Jan., 1914 Jan., 1915	Jan., 1915 Jan., 1916	Jan., 1916 Jan., 1917	Jan., 1917 Jan., 1918	Jan., 1918 Jan., 1919	Jan., 1919 Jan., 1920	Jan., 1920 Mar., 1920
Diphtheria	6	12	1	0	0	0	1	0	0	1	1	0	0	0
Mumps	8	3	10	4	0	0	0	0	0	0	0	0	0	0
Scarlet fever	17	8	12	8	0	0	0	0	5	0	1	2	0	0
Pneumonia	3	5	4	6	0	0	0	0	1	0	0	8	4	0
Measles	24	50	40	25	0	0	0	0	1	5	27	0	0	0
German measles	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Tonsillitis	19	16	8	3	0	0	0	0	0	1	0	0	0	0
Whooping cough	7	12	12	0	0	0	0	0	15	0	0	2	1	0
Chicken pox	15	17	10	6	0	0	0	0	0	0	10	0	6	0
Croup	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Spinal meningitis	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Tuberculosis of eye	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Diseases of eye	0	0	0	0	0	0	0	0	1	1	0	1	0	0
Tuberculosis of lungs	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Rheumatism	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Erysipelas	0	0	0	0	0	0	0	0	0	0	1	2	1	1
Influenza	0	0	0	0	0	0	0	0	0	0	0	24	0	0
Totals	103	103	87	52	2	0	1	0	25	8	41	40	12	1

Our first statistics showed clearly the fact that the incidence of infectious diseases dropped sharply once proper care of the teeth was begun. From the table just presented it may be seen that the number of cases of infectious diseases has been some few more than in the first five years of our study. This proves what we have all felt, that even the most exacting care of the teeth will not entirely eradicate disease. We were never so Utopian as even to hope it would. Yet these statistics when compared with the infectious disease rate before dental work was seriously undertaken do, nevertheless, justify our position that diseased teeth bear a direct relationship to ill health in children. On the other hand, we are just as strongly convinced that diseased teeth are not the only causal factor or even contributory factor in many systemic diseases, whether of childhood or adult life. The present day tendency to blame the teeth for all ills to which human flesh is heir is rightfully condemned in the light of careful dental investigation, and it should be but a short time before so-called oral surgeons, focal infection specialists, amateur roentgenologists and the like are consigned to "innocuous desuetude" together with the other medico-dental fads, however well intentioned. The thoughtful physician or dentist who has kept his head through this maelstrom of almost professional profiteering will continue to place the welfare of his patient above his own emolument, blaming the teeth for systemic disease only when other likely sources, such as tonsils, sinuses, adenoids, etc., have been eliminated.

The pendulum of focal infection has swung too far. We must, however, be on the watch lest the same radicals who pushed it too far forward become ultra-conservative in allowing it to swing too far in the other direction. Much damage has been done and will be done to professional advancement by this cult. We know too many unfortunates at present wearing artificial dentures who still suffer from the same symptoms and diseases which were to have been at least relieved by the wholesale dental extraction of which they were the subjects. The remedy is plain; there should be more genuine coöperation. The diagnoses of arthritis, myositis, neuritis, pericarditis and all the other "itises" should be made by those competent in internal medicine to do so, not by self-styled oral surgeons and arthritis specialists. Likewise should the field of dental diagnosis be left to the dentist. Then let there be consultation!

To extract teeth for diseases on which the most recent medical research is unable to shed light is at least unscientific. But to deny the importance of the teeth as sometimes the sole and often the complementary focus of infection is equally indefensive. It is hoped that the publication of the above statistics showing the improved condition of the children of St. Vincent's Orphanage may lead to a saner view of the whole question.

We believe that care of the mouth and teeth is a necessary prophylactic measure to protect a patient's resistance, and that the teeth may frequently be the sole cause of systemic disease; but we are just as firm in the belief that the teeth should never be sacrificed until it has been definitely established by consultation that other and more important foci of infection are not present.

BIBLIOGRAPHY

Keyes, Frederick A.: Institutional Dentistry Methods. [illegible] Boston Medical and Surgical Journal, [illegible] 1912. [illegible] 1911.
Keyes, Frederick A.: School Dentistry. Dental Cosmos, [illegible] 1915.

VINCENT'S ANGINA—STOMATITIS.

By John E. Ganley, D.D.S., Brockton, Mass.,

Attending Dental Surgeon, Brockton Hospital.

Acute ulcerative inflammation of mucous membrane of mouth and contiguous parts, *i.e.*, cheek, tongue, palate, tonsils, pharynx, gingiva, and lips.

The direct cause is ascribed to Vincent's fusiform bacillus, associated with Vincent's spirochetes. The various modes of infection are promiscuous kissing, drinking from taps on Lyster bag by directly applying the mouth to tap, unsterile drinking cups and glasses, drinking from comrade's canteen or cup, insufficient sterilization of mess kits in wash water provided for the same, inability to perform proper mouth hygiene due to environment, as life in trenches and in the field.

The contributing causes: the soldiers in the trenches or in the field are unable to care for the mouth and teeth properly, food remnants being retained in the interproximal spaces of the teeth. The most active lesions are found around defective dental work, namely, defective bridge work, crowns and fillings, malerupted and impacted wisdom teeth.

There are many types simulating syphilis with herpes labialis. The character of the lesion in Vincent's has irregular shaped margins, bleeds readily on pressure, has tendency to granulate or "scab" over; lesions are multiform. In syphilis characteristic single sore, not painful, has an indurated base and more pronounced.

The methods of diagnosis—Smears from gingival margins, cheeks, tonsils, lips, palate, etc. Stain—Carbo-fuchsin strong, three minutes, washed off with alcohol, then ready for examination; appears under a microscope a cigar-shaped bacillus, sometimes striated, sometimes non-striated; spirochetes are slender organisms consisting of six, eight, or ten spirals, almost invariably with bacillus. In cases where the lesions are located in the posterior portion of the mouth it is well to "take the blood" for one or several Wassermanns as a great many lesions closely resemble those of syphilis.

TYPES AND TREATMENT OF SAME.

Type I. Symptoms—Headache, foul breath, sore throat, anorexia and lassitude. Heavy, scummy deposits or films on gingiva. Saliva is very ropy, teeth and palate tender to pressure and sensitive to heat and cold. Obscure cases some herpes labialis but not frequent. Impaired sense of taste both to foods and cigars, cigarettes or pipe; patient, if a smoker, does not care to smoke.

Treatment Type I case: Dry off areas with cotton pellets. Apply 7% chromic acid and follow immediately with tincture benzoin compound. *Apply both profusely*, using separate dressing pliers for each agent; repeat treatment twice same day if possible.

Second day: General prophylaxis is given, removing all calculus, all stains and deposits. Allow gums to bleed profusely. Rinse mouth with warm normal saline solution. Treat with 7% chromic acid and tincture benzoin compound twice this day.

Third day: In the morning massage gums with 15% solution argyrol, with vigorous massage, inducing hyperemia; afternoon, chromic acid and tincture benzoin compound.

Fourth day and thereon: Spray mouth with copper sulphate 2% until gums heal and a negative slide is procured.

Type II: Headache, sore throat, anorexia, lassitude, gingiva, somewhat hyperaemic, bleeds readily, palate and gingiva very sensitive to hot and cold drinks and food, gingiva and palate present characteristic bluish tinge.

Treatment: First day administer a cathartic, preferably castor oil. Perform general prophylaxis, removing all calculus, stains and deposits with pointed orange wood sticks, work 5% phenol or 5% $AgNO_3$ in pockets and interproximal spaces under free margin of gum. In the afternoon of same day apply chromic acid 7%, follow immediately with compound tincture benzoin.

Second day: Apply chromic acid 7% and benzoin compound A.M. and P.M.

Third day: Copper sulphate 2%—spray mouth. Continue daily until negative slide is obtained.

Type III: Usually found in a fairly healthy mouth. Patient as a rule practises some mouth hygiene, gums very hyperemic, bleed easily; palate very sensitive to heat and cold. *Prophylaxis contraindicated.*

First day: Apply chromic acid 7% and tincture benzoin compound A.M. and P.M. until soreness is relieved, and then give general prophylaxis. Spray mouth with normal saline solution. Spray mouth with copper sulphate daily until lesions heal and a negative slide is procured.

Type IV: Lesions in definite localized area. Patient complains of soreness in region or area. Usually quite a healthy mouth.

First day: Apply chromic acid 7%. Follow with compound tincture benzoin to gingiva and palate complete.

Second day: General prophylaxis. Swab mouth complete chromic acid 7% and follow with compound tincture benzoin.

Third day: Remove stains of chromic acid and tincture benzoin compound and administer daily vigorous massage with finger cot 15% argyrol until negative slide is procured.

CONCLUSION.

Many patients present hypertrophied tonsils with large crypts. After mouth has cleaned up tonsils should be removed; if not, there is liability of recurrence, as it is almost impossible to destroy organisms remaining in crypts in tonsils.

Vincent's angina: Ludwig's angina: Differential diagnosis in floor of mouth. Cellulitis in neck in Vincent's and not in floor of mouth; also smears for Vincent's and streptococci. Temperature more marked in Ludwig's 103°-104°.

In the management of hundreds of cases, both in the Army at Camp Hospital No. 26, St. Aignau, France, and in civilian practice, if the cases are classed according to types and treated as such, *i.e.*, according to type, a negative slide can be procured and a clean, healthy mouth presented in four to seven days. One must have the hearty coöperation of patient in abstinence from alcohol and tobacco during treatment. I believe this treatment to be far more efficacious than methylene blue, diarsenol, arsphenamine, Fowler's solution; not poisonous in any degree, with mercuric cyanide, I find the only other medicament of merit being a solution of diarsenol in ampules put up by Health Laboratory in Philadelphia, and the use of same suggested by Dr. M. T. Barrett of University of Pennsylvania.

Society Report.

MASSACHUSETTS THERAPEUTIC MASSAGE ASSOCIATION.*

TUBERCULOSIS AND WEAK BACK.

Meeting held at Hotel Brunswick April 15, 1920. Dr. Douglas Graham presided. Twenty-four were present.

Prof. Edward O. Otis was the first speaker. Dr. Otis, in his talk on tuberculosis, briefly reviewed the history of the disease. He mentioned the finding of the tubercular infection in the spine of a very old Egyptian skeleton. In the second century Galen described findings which are now recognized as having a relation to tuberculosis. Nothing further of note is recorded until the time of the so-called anatomic period, when dissection became established as a part of medical science. The tubercle was then noted as an abnormality in the form of an inflammatory lesion. Linnet proclaimed that all forms of tuberculosis were from a single type of infection. In 1865 Velmar proved the disease to be communicable. Case of eye infection in a French hospital proved to be tubercular. About this time bacteriology was being placed on a scientific basis and through this form of research the bacillus was shown to be existent. In 1882 reports on the subject were handed to the medical societies. Koch made important contributions to the work of combating this disease, produced a glycerin extract from cultures of the tubercle bacillus,—Koch's lymph. Smith, investigator of the bovine type of the bacillus showed that this type was never transformed into the human type. The bovine bacillus affects children, but not adults. In a series of experiments it was found that 10 per cent. of the child subjects had been infected with the bovine bacillus. Children seldom have infection of the lungs; it is confined mostly to the bones. Infants die from lack of resistance, glandular infection involvement. Various attempts have been made to produce a preventative of infection with but little results as long as the efforts were directed against the infection itself. The warnings issued from various sources were responsible for a special kind of phobia and served no useful purpose. Autopsies showed 90 per cent. infectious evidence in children and adults; not evidence of an active infectious process but proof of the individual's having received the infection at some time. Immunity in adults is gained through early association successfully combated. The tubercular individual is dangerous only to children who have not had their infection. An English doctor put forth a suggestion that it would be well to feed all children with a sufficient amount of the bacteria to guard against haphazard infection and to produce an early immunity. One form of the disease is in the nature of a chronic catarrh of the lungs. The secondary fibroid form is really an activated old infection. The work of fighting the disease today is not only directed against the infection itself, but is for the production of a better understanding of the principles of hygiene and sanitation and the raising of the physical standards of the people as a whole. The question of climate is of minor importance as all climates produce their quota of tubercular individuals. In the treatment of the disease, rest is of primary importance, and whatever exercise is allowed should be carefully checked as to the type and duration.

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* Reported by Mr. Thomas Burns of Cames Institute.

Massage is of great benefit as a stimulant of circulation and nutrition, either as an adjunct or as a substitute for exercise. During the last five years great advances have been made in the treatment of these cases. Italian and German surgeons first popularized the artificial pneumothorax. If the disease is confined to one lung the pleural cavity is filled with nitrogen gas and refills kept up as long as for two years. Case on record of a man in Pavia riding bicycle to hospital to get his treatment by gas infection. Occupational therapy has been established in Mattapan Hospital and other institutions and has proven of great benefit, mentally and physically, to those patients so governed. American Indian adults suffer far more than white adults from the effects of this infection, the reason for this difference being that the former do not so frequently get childhood infection and the supposed immunity following.

Dr. Graham, in thanking Dr. Otis for his very instructive talk mentioned a few personal experiences; one a patient 82 years of age, president of a large insurance company, who said that when he was 28 years old he was given over to die of consumption. His office chair was situated so that he dared not spit, so he had to swallow his spit and in this way manufactured his own antitoxin and cured himself. His thoughts were somewhat in advance of modern progress.

Dr. Otis said that he had no fear of infection through close contact with tubercular patients. His long years of service in this work had convinced him of there being little or no danger.

The second speaker, Dr. H. W. Marshall of Boston, orthopedic surgeon and investigator, spoke on the mechanical arrangements of lower regions of backs and the treatment of their weaknesses. Dr. Marshall exhibited a skeleton for the illustration of his subject and also presented to each person present a drawing of his own making for reference in the explanation of points which have been but poorly described in written material on this subject. Dr. Marshall is the inventor of a number of braces designed for use in the various types of abnormal back conditions. Photographs of these braces were shown. Dr. Marshall is about to present his views on the subject to the medical journals and the article will be obtainable in booklet form. This report is not a complete record of Dr. Marshall's talk. The details of the subject will be more satisfactorily appreciated on reading his own published article.

Dr. Marshall spoke of the vertebrae as spools held in normal alignment during rest and action by the normal function of the ligaments and muscles attached to the vertebrae, and to the bony structures whose movements affect the position of the vertebrae. The malposition of bony parts is, then, a result of improper functioning of their controlling nerve, muscular and ligamentous tissues and not *vice versa* as a certain group would have it. In speaking of slips and dislocations some orthopedists have stressed more the bony arrangements than the action of muscle and ligament on the bony arrangements. The question of referring to the nervous function of the part as affecting muscle-action was introduced by Dr. Graham Dr. Marshall assented to the importance of this point but thought it better to confine the discussion to the more easily visualized mechanics of the parts affected. Dr. Marshall demonstrated the tendency of the body's weight to push the sacrum down and the same influence tending to tilt the pelvis. The anatomy of the sacroiliac joint was described with special reference to the function of the greater and lesser sacroiliac ligaments. It was demonstrated that the usual type of strap applied for relief of sacroiliac strain whilst being efficient in holding the joint to some extent within normal corrective position, the same strap does not prevent the tendency of the sacrum to tilt forward when weakness of the back muscles is involved. Strain of the muscles in the lower back may be confused with a true sacroiliac luxation. In any of these conditions. Dr. Marshall thinks that the back should be given some artificial support. A back strain may involve some tearing of connective tissue with hemorrhage or edema. Together with structural injuries there exists the possibility of there being an infectious process going on, having its focus in the teeth and other seats. Deficient nutrition from any cause has also to be considered. Massage may increase the toxic processes through increasing blood supply. The treatment includes support, elimination of toxemia, massage at the best indicated times, regulation of diet and general activities. The talk was highly instructive, scientific, and stimulating to the interests of the audience. A hearty vote of thanks was accorded to Dr. Marshall by all present.

Book Reviews.

The Diagnosis and Treatment of Heart Disease. By E. M. Brockbank, M.D., F.R.C.P. Fourth Edition. New York: Paul B. Hoeber. 1919.

The appearance of the fourth edition of "The Diagnosis and Treatment of Heart Disease," two editions of which have been called for within the past two years, gives evidence of the value of the book to the profession. The fourth edition includes emendations and additions made after a further experience with the difficulties met by students in mastering the clinical investigation of heart disease. A rearrangement of some of the details of the subject matter has simplified the text. As in previous editions, the author has discussed the elements of cardiac auscultation clearly and comprehensively. In the first chapter are presented preliminary considerations of anatomy and physiology. A chapter describing routine examinations and the complaints of patients is helpful in making cardiac diagnosis. Among the subjects considered in the book are heart sounds and murmurs, areas of audibility of heart murmurs, conduction and transmission of murmurs, special characteristics of the different valvular murmurs, general physical signs and symptoms of heart disease, haemic murmurs, exocardial sounds, septic endocarditis, pericarditis and angina pectoris, and cardiac irregularity resulting from disturbances of stimulation. Of particular interest and importance is the author's presentation of the subject of the treatment of cardiac disease, both before and after the development of muscle failure. The book is illustrated by diagrams and charts, and will receive from students and practitioners alike the appreciation accorded preceding editions.

Idealism of the French People. By Louise Seymour Houghton. Boston: Richard G. Badger. 1918.

The recent war has been not the source of the idealism of the French people, but the opportunity for the culminating expression of a spirit which reverts to the age of the Druids. This little volume portrays with remarkable sympathy and insight the characteristics of the French people. The stern sacrifices of the Druid, the spiritual purpose animating the Crusades, the ideals impersonated by Joan of Arc, the wars of Religion, and the French Revolution all express the idealism which has guided France throughout the centuries. This book presents many examples of the noble aspiration which has been the underlying principle of the political, religious, and social struggles of France. Her sons have sacrificed themselves cheerfully in the present war in order to maintain their heritage of devotion to the cause of idealism. *The Idealism of the French People* is a book of unusual interest; it expresses a spirit which will be an inspiration to everyone who reads it.

Gynecology and Obstetrics. The Practical Medicine Series, Volume V. Edited by Charles L. Mix, A.M., M.D. Chicago: The Year Book Publishers. 1918.

Gynaecology and Obstetrics is the fifth volume of a series of eight included in *The Practical Medicine Series.* This series covers the entire field of medicine and surgery, and is published primarily for the general practitioner, but it is so arranged in several volumes that it is possible for those interested in special subjects to secure only the parts they may desire Volume V is a complete review of the subjects of gynaecology and obstetrics for the year preceding its publication. Part I considers the general principles of gynaecology, and the special problems of menstruation, the ovary, displacements and injuries, infections and allied disorders, malformations and tumors, and sterility. Part II deals with the physiology and anatomy, the hygiene, diagnosis and pathology of pregnancy; with the problems relative to labor and the puerperium; and with the diseases and accidents affecting new-born infants. This volume covers its subject thoroughly and is of unusual practical value.

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ANTERIOR POLIOMYELITIS.

In view of the number of cases of anterior poliomyelitis which have been reported recently to the Boston Health Department, the attention of physicians is called to the fact that expert consulting service is available for physicians who may desire assistance in expediting early diagnosis of cases presenting symptoms of infantile paralysis. The Health Department has emphasized the importance of early diagnosis of such cases in order that such precautions as are customarily recommended with respect to isolation can be initiated at the earliest possible moment and in order that such treatment as may be deemed best to promote the welfare of sufferers from this disease can be begun without delay.

In order to obtain the services of a consulting expert in the service of the Boston Health Department application should be made to the Health Department in person or by telephone. The office is open for this purpose from 9 o'clock A.M. until 10 o'clock P.M., every day except Sundays and holidays, when the office is open only from 10 o'clock A.M. until 10 o'clock P.M. Applications for consultation service may be made in person at the Health Department, City Hall Annex, between the hours of 9 A.M. and 10 P.M. daily, except on Sundays and holidays , on which days the office opens at 10 A.M. Applications may be made by telephone between the hours above named, by calling Fort Hill 5100 and asking for the Health Department, Medical Division, except that after 1 P.M., Saturdays, and on Sundays and holidays, Main 3887 should be called.

The clinic of the Harvard Infantile Paralysis Commission also is available for advice and assistance with respect to the treatment and especially the after care of patients who are suffering or have recently suffered from infantile paralysis. The clinic is conducted in the Children's Hospital, 300 Longwood avenue, at 10 A.M., on Tuesday, Thursday and Saturday mornings. The clinic has facilities whereby patients who cannot otherwise be conveniently transported to the clinic may be safely removed thither and returned to their homes in a conveyance under the direction of the clinic.

Unless financial aid is given immediately by the public, however, the Commission will be forced to abandon its work not only in the treatment of more than one thousand children crippled in the epidemic of 1916, but also in the care of those who may be left incapacitated by the present increased prevalence of paralysis. The following statement issued by the Harvard Infantile Paralysis Commission gives authoritative confirmation of the seriousness of the situation:

"There is an increased prevalence of infantile paralysis at present throughout eastern Massachusetts. The Harvard Infantile Paralysis Commission is acting as the agent of the State Department of Public Health upon the request of the department in the early diagnosis of the disease. It is coöperating also with the city of Boston Department of Health. The State and the city are furnishing the funds necessary to pay for expert diagnosis of the disease.

"Money is needed immediately, however, to provide the after-care treatment designed to restore strength to the muscles left paralyzed. The State and city departments of health have available funds to spend upon prevention, but the use of public funds by these departments has never been authorized for after-care treatment of such cases. Financial assistance, however, has been furnished the Commission by various city boards of health and city councils when local clinics were found necessary.

"Since 1916 the Commission has been supplying regular treatment to more than 1000 children crippled in the epidemic of that year. This after-care has been supported entirely by public subscription, with the exception of the assistance given for local clinics above mentioned. If further funds are not received by October 1 not only will there be no provision for affording the proper after-care treatment for the new group of children afflicted with the disease, but the work of caring for the 1000 patients still undergoing treatment will have to be discontinued.

"All money received will be used for the treatment of the children. There is no overhead expense, and the members of the Commission give their services without compensation. Checks should be sent to Kidder, Peabody & Co., 115 Devonshire street, Boston, and made payable to the Harvard Infantile Paralysis Commission Fund."

Under the ten thousand dollar emergency appropriation authorized by the city council for use in combating infantile paralysis, Dr. S. A. Levine of Boston has been appointed expert diagnostician in the Health Department for a period not to exceed three months. An appointment has been given also to Dr. Wolfert G. Webber of Brookline, who will be in the service of the Health Department for three months as epidemiologist.

The State Department of Health has established a clinic, to be under the direction of Dr. Arthur B. Lyon, for the purpose of aiding Massachusetts physicians in making an early diagnosis of doubtful or suspicious cases of anterior poliomyelitis. Physicians desiring the services of the clinic are requested to communicate with the following district health officers:

1—Dr. C. W. Milliken, 411 Book Store Building, New Bedford.
2—Dr. C. T. O'Donnell, Room 546 State House.
3—Dr. Lyman A. Jones, Willey House, Swampscott.
4—Dr. C. E. Simpson, 100 Holyrood avenue, Lowell.
5—Dr. F. A. Finnegan, 614 Park Building, Worcester.
6—Temporarily in charge of Miss Mary E. Ayer, 289 Main Street, Springfield.
7—Dr. O. A. Dudley, Waite Building, Pittsfield.

During the month of August, fifty-six cases of anterior poliomyelitis were reported to the Boston Health Department. During the first half of September, there were reported one hundred and ninety-four cases. Thus far the disease has gained greater headway than during any year since the epidemic of 1916. Physicians are strongly urged to avail themselves of the services of the clinic and consulting service which has been organized to prevent as far as possible the spread of the disease.

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MEDICAL NOTES.

Award of the Médaille de la Reconnaissance Française.—The Médaille de la Reconnaissance Française has been awarded to Dr. Noel Bardswell, medical advisor to the London Insurance Committee, in recognition of the services rendered by him in Paris in connection with the treatment of tuberculous French soldiers and the establishment of an agricultural training colony at Épinay.

Dr. Jessie Macgregor Prize.—Miss Lucy Davis Cripps has been awarded the Dr. Jessie Macgregor prize of the Royal College of Physicians, Edinburgh, for her work on tetryl.

Appointment of Dr. C. Lee Shilliday.—Dr. C. Lee Shilliday, professor of anatomy and histology in the college of dentistry, University of Tennessee, has been appointed professor of biology in the Pennsylvania College of Gettysburg. Dr. Shilliday will succeed Dr. George Stahley.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending September 25, 1920, the number of deaths reported was 173 against 178 last year, with a rate of *12.06 against 11.66 last year. There were 42 deaths under one year of age against 35 last year.

The number of cases of principal reportable diseases were: Diphtheria, 32; scarlet fever, 16; measles, 5; whooping cough, 19; typhoid fever, 7; tuberculosis, 34.

Included in the above were the following cases of non-residents: Diphtheria, 5; scarlet fever, 2; typhoid fever, 2; tuberculosis, 7.

Total deaths from these diseases were: Diphtheria, 1; whooping cough, 2; tuberculosis, 10.

Included in the above were, the following cases of non-residents: Tuberculosis, 2.

Infantile paralysis cases, 30; infantile paralysis deaths, 4.

1920 Federal census.

Worcester City Hospital.—The detailed report of the Worcester City Hospital for the year ending November 30, 1919, shows that notwithstanding the soaring prices and the necessity of increasing wages they have made important changes for the betterment of service for the patients and extensive additions to the laboratory and wards.

Several prominent physicians have been appointed to the staff with the expectation of securing better coördination of all the scientific work of the hospital.

Much valuable work has been done by the various departments under the supervision of the skillful instructors with the help of the new equipment.

The Worcester Training School for Nurses offers a three years' course of regular hospital training with the addition of kindergarten methods better to qualify a nurse to care for and entertain crippled and convalescent children.

The entire report shows a creditable work accomplished.

Carney Hospital Appointment.—Dr. James Francis Brady of Boston, has recently been placed in charge of the Dermatological Department of the Carney Hospital, South Boston.

Correspondence.

THE HEMOSTAT IN TONSIL OPERATIONS.

Mr. Editor:

It was interesting to read "A Hemostatic Forceps for Post-Operative Tonsillectomy," which was published in your issue of July 22nd. The author urges his device as a means of stopping hemorrhage by applying the clip with his Hemostatic Forceps direct to the bleeding point.

Those atypical arteries which we encounter occasionally, through no fault of ours, and the large veins that are severed, especially in grown-ups with chronic tonsillitis and in cases of previous peritonsillar abscesses, certainly need immediate attention. The field ought to be left by the operator in a state of full satisfaction and safety.

In December 27, 1917, of your issue in the article, "The Use of the Hemostat in Tonsil Operation," we have pointed out how a hemostat about five or six inches long and pointed at the end, when applied to the bleeding point will check tonsillar hemorrhage, aiding the natural forces of the superior constrictor and snare to cause hemostasis at the time of the operation. The writer, and no doubt others also, has used this method with very gratifying results, and did not have to resort so far to suturing the vessel even in a few cases of arterial bleeding. It would be interesting and instructive to hear from other colleagues their experience with the hemostat in tonsil operations.

Joseph Prenn, M.D.,

536 Commonwealth Ave., Boston.

DR. CALLAHAN'S "LAWS OF THE HEARING CENTERS."

Peabody College for Teachers,
Nashville, Tenn., September 13, 1920.

Mr. Editor:

The applications of his so-called laws of the hearing centers which Dr. J. F. Callahan makes to the detection of malingerers feigning deafness in one ear, is not only interesting but quite inexplicable to the unsophisticated.[*] The explanations of the phenomena are, however, so faulty as to need attention. His law is stated in our last reference as follows: "Stimuli which are similar in all their properties except in intensity are not dissociated by the mind, and only the stimulus which is of the greater intensity is registered in the brain so that we are conscious of it." We are told that this law "is not a law of auditory responses alone, but applies to all responses of stimuli *which follow this law*,"[†] which would seem to follow as a matter of course: but no convincing cases are given to uphold the "law." Leaving out of consideration, however, other senses than that of hearing we must note that even here the law must be taken with some reservations.

More careful controls in the experiments described by Dr. Callahan would readily reveal difficulties that would be unanswerable on his views. It would be found, that under certain conditions the sound *would* be located on the side of the head, or in the ear, receiving the wave of lesser intensity. It is well known to those acquainted with the literature of sound localization that we have unconsciously learned to locate sounds on the basis of three different factors, at least: differences in intensity of the wave in the two ears, differences in complexity, or in the relative intensity of partials, and differences in phase of the physical vibrations. None of these factors can be singled out consciously and brought into the explicit awareness of even an experienced subject; one hears the sound as already located, as being "there"; one does not hear the differences in the sounds in the two ears, and then consciously or reflectively locate the source of the sound. Intensity differences are, of course, most important; hence the practical workability of Dr. Callahan's experiments and methods.[‡] Under certain conditions, however, when the phase-of-the-wave factor becomes most important in localization—when the phase differences in the two ears, the pitch of the tone, and the intensity are just right for such results—these methods might go against a perfectly honest and keenly observant subject. This unfortunate outcome cannot occur with the use of high tones, because in the case of high tones the wave lengths are so short as to make the phase-difference factor in localization inconstant in its significance.

Just as we have unconsciously learned by our active experiences that a stimulus on the upper part of the retinae means an object at our feet, that a stimulus on the right side of the retinae means an object at the left, etc., so we have also learned to "hear" a sounding object on the right when the sound waves from it come to the right ear with slightly greater intensity than they have in the left ear, or when (in the case of low-pitched tones) the waves come to the right ear with a slightly earlier phase than that with which they reach the left ear. The difference for the various senses lies, however, in the fact that in the case of sound we cannot *di-*

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[*] Laws of the Hearing Centers and the Application of these Laws, *The Laryngoscope*, September, 1919, pp. 3-20; Concensual Reaction in the Centers, *Ibid.*, *October*, 1919, pp. 3-12; Hearing Test to Detect Malingering, Boston Medical and Surgical Journal, 1918, Vol. clxxix, pp. 236-239; and Hearing Test with Voice to Detect Malingering, *Ibid.*, pp. 423-425.

[†] The italics are ours.

[‡] I have cited some of the most important experiments on phase differences in localization of sound in my article, The Nature and Probable Origin of Binaural Beats, *Psychol Rev.*, 1919, Vol xxiii, pp. 333-351

rectly experience these differences in stimulation as we can do, when our attention is called to it, the binocular differences in visual perception. It is this impossibility of direct awareness of the auditory factors of localization that makes possible such use of experiments on localization as Dr. Callahan makes. It should be added that the danger of proving guilty of deception a perfectly innocent subject by the method under consideration disappears, so far as phase differences are concerned, when the human voice is used as stimulus, because the complexity of partial vibrations renders the phase-difference factor insignificant. JOSEPH PETERSON.

MATERNAL OBSTETRIC MORTALITY.

Wakefield, Mass, September 20, 1920.

Mr. Editor:

It is exceedingly unfortunate that the MEDICAL AND SURGICAL JOURNAL, which is the semi-official organ of the Massachusetts Medical Society, should have "laid before the medical profession" statistics, which seemed to the JOURNAL an "indictment of the whole medical profession." The JOURNAL is to be congratulated that it had the courage promptly and emphatically to show in the next issue on September 16th that the statistics were unreliable and unjust. The prompt repudiation will not, however, prevent the figures being quoted far and wide.

It is surprising that the maternal obstetric mortality for the whole state is at all comparable with that of the Boston Lying-In Hospital Out-Patient Department now that the JOURNAL and Dr. Malone have shown that the Out-Patient Department statistics include only normal cases, other cases being sent into the Hospital proper. The finger of scorn might as well have been pointed at the highly skilled staff of the Hospital because their statistics are higher than those of the second and third year students in the Out-Patient Department.

The JOURNAL has not yet shown why the statistics for the whole state have nearly doubled since 1901. During this period, medical training has improved greatly; good nursing has become general; hospitals are more frequent and have excellent maternity wards; rapid transportation of physicians, nurses, and patients has become possible by the formerly unknown automobile and by smooth roads; telephones are everywhere; pituitrin has made instrumental deliveries much less common; and surgical cleanliness, practically in its infancy in 1901, has become almost universally recognized and used by the profession. Physicians are probably as faithful as ever to their patients' welfare.

The above factors should have diminished mortality, but the figures would seem to show that it has nearly or quite doubled. If it is true, then there must be other glaring causes. No such causes occur to me, nor to those with whom I have talked, nor do I believe they exist.

Is not the high rate due somewhat to the more accurate recording of statistics? Until 1911 death certificates did not include instructions to record puerperal complications. Is it not also probable that death occurring in the earlier months of pregnancy are now more generally included in the records?

The JOURNAL has unwittingly spread broadcast harmful misinformation. Can it not now champion the medical educators, the physicians, the hospital staffs, and all other forces that have been doing so much for the prospective mother, so that, in maternity work, the laity and the outside world may still rightly "have faith in Massachusetts" and her physicians?

Yours very truly,

RICHARD DUTTON, M.D.

ARMY AND NAVY MEDICAL SERVICE.

Washington, D. C., September 16, 1920.

Mr. Editor:

Dr. Hugh Cabot, speaking before the Massachusetts Medical Society, June 9, 1920, on the subject of compulsory health insurance, takes a needless fling at the medical service of the armies and navies of the world when he says of state medicine: "At best such a service would be comparable to that now existing in the medical establishmennts of armies and navies the world over and in this form it is notorious that lack of inspiration and degeneration more or less inevitably follow."

We admit very frankly that there are serious faults in the medical men of the armies and navies of the world and that there is room for great improvement in the character of the service we render to our patients. There are inherent in the unalterable conditions of our very life many serious and some insurmountable obstacles to the most efficient service, one being the difficulty of securing for the medical corps of the Army and Navy the proper type of man. Remarks like the one quoted do not help us in this particular. We beg to submit that the handling by the state of the medical needs of the entire civil population on the one hand and the administration on the other hand of the corresponding requirements of a relatively smaller number of male adults under strict military control are such essentially different matters that to compare them can scarcely furnish illuminating or logical deductions in regard to compulsory health insurance. The reference to the government services seems to us needless and therefore peculiarly offensive.

To such readers as have the leisure and the disposition to look below the surface and challenge, in their minds at least, the sweeping condemnations made by facile speakers too high up in the medical hierarchy to be called to account we suggest the mass of evidence furnished by medical history controverting Dr. Cabot's defamatory allusion. Was there time and space we would begin the investigation at the time of that conceited civilian who evaded his imperial master's summons to military service on the ground of a more important mission. His call was to reform medicine and though he achieved a reputation second only to that of Hippocrates posterity has decided that in spite of his brilliant discoveries and unquestioned talent his influence frustrated for a thousand years the progress of scientific medicine. To cite Beaumont and the elder Borgognoni; Paré, Pringle and Pirogoff: Lind, Larrey and Laveran: Clowes and Corvisart is to mention but a few of the military and naval men and government servants who achieved distinction by their contributions to the progress of medicine in its various subdivisions and to the betterment of living conditions. Equally large is the list of those who have gone to their graves unhonored and unsung, unknown to fame through conspicuous success or failure, but for whom there beamed fires of affection and trust in the hearts of their equally nameless contemporaries. Largest of all is the category of those who began their careers in government service, or entered it later, for what profit of experience it offered but could not or would not endure its asperities and disappointments for life.

The pioneer part played by naval medical men in the development of venereal prophylaxis in this country, their accomplishments in hygiene and sanitation, their contribution to the health education of the American people through the practices inculcated on successive thousands of enlisted men passing through their hands: the suppression of typhoid fever by miliary medical endeavor in India, Africa, America and Europe; the brilliant success of the Army in elucidating the obscurities of yellow fever prevention and the joint work of medical men of the Army and Navy under Gorgas in making possible the construction of the Panama Canal these are but a few illustrations of military and naval achievements that give the lie to Dr. Cabot's generalization.

Had Dr. Cabot seen fit in carefully selected words to refer to the well recognized perils that beset the path of the government physician and at the same time explained that at least in the case of soldiers and sailors free medical attention from government-paid physicians is a necessity whereas in civil life the assumption of medical obligations by the government is not a necessity and would be fraught with even greater menace no exception could have been take to his utterance. Unfortunately he did not see fit to do so.

We have great difficulty in securing good men for the service and when we get them, as we do in spite of limited emoluments and scant opportunity for many of the rewards without which the civilian will not work, it is because there are still to be found young men in whom there beams a spark of enthusiasm, who have in their sense of duty, in their high concepts of their calling an inspiration not begotten of purely personal ambition. When men of prominence and attainment like Cabot speak in the tone of the address referred to they discourage good men from entering the services and so contribute directly to accentuating the regrettable features they decry. Dr. Cabot could have said with equally telling effect, so far as his main argument was concerned, that while there are many unsatisfactory details in the life and career of the medical man in the Army and Navy, we are under the obligation to care for the health of the soldier and sailor and that the career of military and naval medicine while pecuniarily unattractive offers full scope for honest and worthy effort towards the uplift of mankind and the advancement of science (*cf.*, hygiene, sanitation, tropical medicine, etc., etc.), whereas compulsory health insurance involves a paternalism like that which contributed to the downfall of the Roman Empire.

So long as our leading medical men in civil life held up to derision the humble but earnest efforts of medical men of the services and indulge in defaming utterances about them, how can they expect these services to attain the ideal standards they inferentially demand for them?

It is not unpatriotic to recognize the faults of government and to advertise them by public discussion if the critic at the same time has remedial measures to suggest and is doing his part to counteract the evils he decries. Loose, self-contradictory statements, unqualified invective and sweeping, superficial comments of a spirit of sympathy and helpfulness we shall always be grateful for; but the parenthetical innuendo and the casual sneer are unworthy of the upright citizen of low degree and constitute real disloyalty in those whose prominence in public life assures ready popular acceptance for the most specious and illtimed comment.

Dr. Cabot begins his address with a mildly deprecatory allusion to the shortcomings of the profession as a whole. "It has perhaps been a weakness of the medical profession that it has not sufficiently exerted its great potential influence in directing or influencing the changes in the relation of medical practice and medical custom of the community. We have on the whole been too apt to regard such things as other people's business and have held the view that the care and management of the sick constituted our whole relation to the community." This is very gentle language. The fact is that the profession as a whole has deliberately and flagrantly neglected its civic responsibilities in a manner to deserve the most energetic castigation. Had Dr. Cabot reflected, when he spoke with so much greater incisiveness about members of the government services, on the work done by them, in and for the community and the state, through painstaking, persistent health education of enlisted men who at the end of their service with the colors go home to become disseminators of health information and living examples of health practices? To carry on a continuous anti-smallpox campaign, to teach personal hygiene, to toil in a hot stuffy cabin over the preparation of official returns is laborious, but it is constructive work. For years insurance companies and writers of medical books in search of substantiating figures have been eager to secure as fast as they appeared the vital statistics thus laboriously prepared while a few public spirited physicians have tried in vain to coax and cajole the physicians of the country to do their part in reporting births and deaths and in standing up for health measures in town and country, regardless of vested interests and personal profit.

Herbert Spencer remarked that "there is generally a soul of truth in things erroneous," and so there is an element of truth in Dr. Cabot's casual caustic comment. We in the service are struggling in season and out of season to indoctrinate the young civilian donning a uniform with such ideas of obligation and service as shall deprive our detractors—they will always exist—of any very substantial basis in fact. Meanwhile we are overwhelmed not so much with chagrin at our shortcomings as with painful astonishment that men of such distinction as to fill chairs of great medical schools and make annual addresses before important medical societies should forget the responsibility entailed by their high positions. If the audience addressed contained a sprinkling of disgruntled, discharged, temporary Army doctors, the remarks quoted may have been agreeable, but what effect do such remarks have upon the younger generation? Surely the professor is not aware of the indelible impressions produced by his expressed opinions on the recipient minds of his pupils. We can scarcely plead thoughtlessness as the excuse and we hesitate to ascribe malevolence as the cause of such a tone, but no enemy propaganda could be more effective in disorganizing the medical corps of the Army and Navy than to have such words from great teachers of the talent and education required to do the work of the medical department satisfactorily. There are people in the service who affect to hold that doctors are not an essential and integral part of the Navy—they are few and need no refutation—but we scarcely imagined that in the professional brotherhood itself any leader would say that we must not have a medical service or, having it, not endeavor to make it as good as possible. The way to improve it is not by cavil but by urging the best that our schools produce to enter and elevate it.

Our country is just now a prey to a host of powerful and subtle influences subversive of order. Money, the god of many, is passing into the hands of new and often unlettered custodians. The compulsory insurance which Dr. Cabot opposes is itself a conspicuous index of startling and dangerous tendencies. The services are making determined efforts to hold men to a calling in which work and worth rather than money are the rewards. Surely the time for belittling these services is ill chosen.

Very dutifully yours,
J. S. Taylor.
Captain, Medical Corps, U. S. Navy.
Editor, U. S. Naval Medical Bulletin.

ANNUAL ETHER DAY INVITATION.

The Trustees of the Massachusetts General Hospital invite all members of the medical profession to attend the Ether Day exercises at the Massachusetts General Hospital on Monday, October 18, 1920, at four o'clock. Dr. Alonzo E. Taylor of the University of Pennsylvania, will give the annual Ether Day address.

The Boston Medical and Surgical Journal

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Address.

SOME OBSERVATIONS ON THE TREND OF MODERN PEDIATRIC TEACHING.*

By Lewis Webb Hill, M.D., Boston.

The teaching of pediatrics in the last ten years has assumed more and more importance; the medical schools as well as the general public are beginning to realize that disease in infancy and childhood may in many cases offer widely different problems from disease in adult life. Therefore in most of the medical schools the departments of pediatrics have grown rapidly, and owing to the realization of the public that the ills of children need special knowledge the number of men devoting themselves exclusively to pediatrics, or at least making it their chief interest, has increased enormously, and is still increasing. Pediatrics is in a very active period, more so, perhaps, than any other department of medicine. Medicine in general is likewise in the most remarkable period of its entire history; medical education is becoming each year more and more efficient, and it is undoubtedly true that more good doctors are being sent out each year from the medical schools and hospitals than ever before. The study of medicine is a peculiar sort of education; it is taught differently in many ways from other branches of knowledge—it is part science, part art, and is neither wholly the one nor the other. In its history it has exhibited many different tendencies and each era has had its own particular problems. I wish to discuss today what seem to me problems that lie before us at the present time as teachers of pediatrics.

THE RELATION OF THE LABORATORY TO PRACTICE.

The function of a medical school is first of all to produce practitioners of medicine to take care of sick people; secondly, to produce new knowledge to further the science of medicine. Today is a day of research; the spirit of investigation is present in our medical schools as never before. Particularly is this true of pediatrics, where there are so many interesting and important problems still to be solved. As regards diseases of children, most of our new knowledge is coming through chemistry, and many of the teachers of pediatrics in the schools are expert chemists. These are represented mostly by the younger men; the older pediatricians have not had the training, time or inclination to go deeply into laboratory work. I do not mean to decry the laboratory nor the knowledge which comes from it, it is our best and most scientific method of getting at the minute processes of disease, but I honestly believe that there is at the present time a danger of neglecting the clinical, practical side of pediatrics in favor of the laboratory. This must not be; we must teach practice preeminently, but still we must found our practice in so far as possible upon sound scientific principles which come largely from the laboratory. When in one teacher laboratory knowledge is combined with extensive and sound clinical experience, when he has above all, that most priceless of possessions in medicine, common sense, that man is valuable indeed to a medical school, provided we have, of course, the teaching power. If a man is preëminently a laboratory man and has not had a wide and a rich clinical experience, he is not the best man, in my opinion, to be the head of a department. A man should not be considered an accomplished pediatrician and teacher simply because he may have carried out some complicated physiological or chemical investigation, when he may be only a mediocre or poor clinician. On the other hand an old and expert clinician who knows or cares nothing of modern laboratory investigation, and who has not kept abreast of the latest research is not the best type of teacher either. The two qualities, laboratory knowledge and wide clinical experience, are fortunately combined in many of the teachers of the present era. One of the most important questions before medical schools today is that of the full time professor. No man in these busy days can give his best efforts to teaching, when he is continually at the beck and call of a large and exacting practice; therefore the full or half-time professor is the best solution of the teaching problem—of that I am convinced—but he should have practiced his profession for some years before he is appointed professor—he should not come directly from the laboratory to the chair, and he should not only be permitted, but required to do a consultation practice while he is professor. This is the only way in which he can keep in touch with practical medicine. He can bring to his students a freshness of vision and a knowledge of disease as it actually exists in sick children in their homes, which the exclusive laboratory and hospital man can never do. There is a very great difference between private and hospital practice, we all know that, and there are many conditions and situations which arise in private practice that one never encounters in the hospital. The average medical student is altogether too prone to attach too much importance to laboratory tests, he gets into the general attitude that he cannot make a diagnosis of pneumonia or empyema without a white count, the diagnosis of syphilis without a Wassermann, or that of tuberculosis without a Von Pirquet test. We should strive to make our students have a sense of proportion, to make them see the broad aspects of their cases, and to make them realize that the vast majority of the laboratory tests should be used as confirmatory evidence to the other data on the case—they must not get into the habit of putting the cart before the horse, and trying to make their cases fit the laboratory tests instead of the other way round. The modern medical student is a great theorist, he can usually discuss electrocardiograms and renal function tests with great intelligence—but he is often sadly deficient in a sense of proportion and in many of the practical questions of medicine. A thousand small details of practice ought to be impressed upon medical students; they must be made to realize that in private practice common sense and the making of the patient comfortable are usually more important than white blood counts. These details of practice, this family doctor attitude, which is, I believe, so necessary, can be taught to students only by a man who has practiced, and who has practiced long enough to be a shrewd, wise clinician. There is no necessity of conflict between science and practice—the student should be taught to use the scientific method in his dealings with patients, he should be a scientific practitioner, but he must be a practical practitioner.

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* Presidential address before the Association of American Teachers of Diseases of Children, New Orleans, April 27, 1920.

The laboratory has helped us; it is responsible for most of the great advances in medicine; without it, and without our scientific viewpoint we are nowhere; but we must have a care in this era of science that in our enthusiasm for the teaching of the theory of medicine we do not neglect the teaching of its practice.

THE DIDACTIC LECTURE.

Fifty years ago a large part of medical instruction was given by means of didactic lectures, and the student had comparatively little chance to examine a patient once, much less to follow cases in the wards from day to day.

It was the late Sir William Osler who first insisted upon the necessity of thorough ward work in internal medicine; that the student should be allowed to take an active part in the conduct of the case. In pediatric teaching, likewise, we all recognize the great value of ward and out-patient work, and a large part of the instruction in the good schools is given in this way. The importance of this cannot be over-estimated; the student gets a chance to see patients with his own eyes instead of through the eyes of the lecturer; he regards the patient as his very own, and undoubtedly takes more interest in the disease than he would otherwise. I wish to lay especial stress on the fact, however, that the didactic lecture is still valuable, and that at the present time there is a considerable tendency to underestimate its value. The worth of the didactic lecture depends entirely upon the personality of the man who gives it; it can be flat and uninspiring, or intensely interesting. The man who takes up the various conditions discussed in a formal textbook style will rarely be successful, and such lectures are deservedly condemned. Lectures should be given in a more informal way; the lecturer should omit such material that can be obtained just as well by the student from his textbooks; he should take up in detail many small points not ordinarily discussed in the books; he should also take care to present in a live way the principles of whatever subject he is discussing, and especially should he illustrate his principles from his own personal experiences. Lectures which come from the rich experience of a wise man are always intensely interesting to the student and are never forgotten.

Dr. W. S. Thayer of Baltimore, in speaking of the lectures of Dr. Reginald Fitz, says, “No one who heard those remarkable lectures could have failed to carry away a deep impression of the strength, the ability, the learning of the man. They were remarkable lectures, remarkable in form and substance; models of clear and precise exposition, admirably delivered in language, every facetted word of which seemed to have been chosen so that it, and it alone, could fill its place. Stimulating hours which gave to many of us a lasting realization of the importance of precision and accuracy, in observation and thought and expression.”

It is true that the didactic lecture has been overdone in the past, but let us not forget that good didactic lectures still have a great deal of value.

THE NECESSITY OF TEACHING FUNDAMENTALS IN INFANT FEEDING.

All of us would probably agree that infant feeding is the most important part of pediatrics. It is this that the young practitioner will have to do as soon as he starts practice; it is this which gives the young individual a proper start in life; it is this which is of supreme importance in reducing infant mortality,—one of the ultimate aims of every pediatrician and general practitioner. The necessity of devoting considerable time to infant feeding in the curriculum is self-evident; if possible it should be given both during the third and fourth years. To my mind the importance of a thorough course in infant feeding cannot be over-emphasized. In the third year the student should get didactic lectures, in the fourth year more lectures and demonstrations to small sections, combined with ward and out-patient work. Infant feeding should be hammered into him so that he feels he knows it better than any other subject in pediatrics. If the student does not have a thorough knowledge of the fundamentals of infant feeding when he graduates he will be lost. This necessity of teaching fundamentals I wish to insist upon, for it is this that is most often neglected. We must teach the chemistry of the baby and of his food, we must teach the student why he does this and that, we must let him see the reasons for his procedures. If he knows the groundwork, if he knows the principles upon which modern infant feeding is based, he should have little difficulty in applying these principles practically. Infant feeding must not be taught by rule of thumb or by memorizing various tables and formulae—it is not enough that the student knows how to make barley water and oat gruel, and about what to feed babies of various ages—he must know more about the baby himself; the physiology and chemistry of the baby's body must be the cornerstones upon which his whole structure of infant feeding is built. He must know intimately the various steps in the digestion and absorption of the food elements; he must know their relationships and influence upon one another, and the relationship of the intestinal bacteria to them all. He must know the chemical processes that occur when fat or sugar or protein decomposes in the intestine; he must be taught the antagonism between putrefaction and fermentation; what determines the one and what the other; what processes tend to make an alkaline and what an acid intestine. In a word, he should be taught to know, in so far as any of us can know, the processes that are actually occurring inside of the baby that he is dealing with. If he has an understanding of these things he will feed his normal and abnormal babies intelligently instead of blindly. The standard of medicine in any community is no better or no worse than the standard of its general practitioners. General practitioners are the ones who do most of the infant feeding, particularly in the smaller cities and towns; the babies fed by the skilled pediatrician are comparatively few; it therefore rests with the general practitioner whether the majority of the babies in this country shall be fed well or poorly. Most of the graduates of our medical schools become general practitioners; therefore, let us concentrate on infant feeding in the curriculum, let us not be satisfied to give to the student a mere smattering of it, and above all, let us teach him the physiological and chemical processes upon which all nutritional therapy depends.

INFANT WELFARE.

Another subject to which especial attention should be given is that of infant welfare. In the last two years, as never before, has the importance of conserving child life been recognized, and there is going on all over the country an infant welfare movement of great importance. The medical student, however, usually hears very little of these things. There should be given in every medical school in the pediatric course, lectures dealing with the methods that are being used to promote infant welfare, and to reduce infant mortality. Particularly should the student be enabled to see something of the workings of milk stations. The medical student graduating from a big medical school and going back to his small home town to practice is expected to be, and very often is, a leader in the community. He should be active in promoting infant welfare. Therefore, he should be taught in the curriculum something of the methods that are used.

THE GRADUATE STUDENT.

Since the war the question of the duty of the medical schools to medical graduates has become more important than ever before. Practitioners are realizing more and more that their days of study must not stop when they graduate from the medical school, but that they must be continually students throughout their professional careers, if they wish to keep abreast of the times and to do high grade work. The unprogressive, who is oblivious to all progress, cannot compete with his fellows in these days; he must find time somewhere for a reasonable amount of study. Post-graduate training in pediatrics is very desirable for many practitioners, they feel the need of it, and as Dr. John Morse said some years ago at a meeting of this association, the average graduate of even ten years ago is very much behind the times as regards modern advances in pediatrics, unless he has been actively connected with a children's hospital, or has made pediatrics his special study. The general practitioners see most of the patients—the standard of medical practice in a country should be judged, not by the attainments of the specialists, but by those of the general practitioners. The medical schools of this country owe a responsibility to these men; they must see that their needs are met; they must furnish adequate post-graduate training for them. Pediatrics is getting to be a very popular specialty, and every year there are many general practitioners who wish to spend a month or two in some large medical center brushing up their knowledge of diseases of children. Two of the best known post-graduate schools had 294 students taking courses in pediatrics during 1919. Furthermore, there are many men who have been in general practice for several years who wish to discontinue it and to devote themselves to pediatrics entirely. Such men as these make, as a rule, excellent specialists. They have a broad knowledge of disease in general, and a common-sense viewpoint which, combined with a year or two of special intensive training, is very likely to produce a first-class pediatrician. There is a splendid opportunity in many towns of from 25,000 to 100,000 inhabitants for such men as this, and I believe that there is no question but that in the next few years more and more general practitioners will be turning to pediatrics as a specialty.

The needs of these men must be met; the big medical schools of the country are not doing their duty if their needs are not met. Medical education should be a continuous affair, the student should not lose track of his medical school when he graduates, but should return to it for brief or for longer periods of study, as the case may be; and the school should welcome him with open arms. I believe that each year graduate instruction in medicine will grow in importance, and eventually that the more progressive medical schools will pay fully as much attention to post-graduate instruction as they do to undergraduate. Post-graduate work should be in the hands of the medical school. Unfortunately it has not been, except in a few instances, and therefore, many special post-graduate schools have sprung up, a few of which are excellent, but most of which are not at all first class. Some medical schools will recognize these responsibilities, some will not; but those who do will be the gainers, for nothing can give more prestige to a medical school than to have large numbers of graduate students from all over the country flocking to its door for instruction. Post-graduate teaching is difficult, there is no question of that, and when there is at the same time necessity for undergraduate teaching, the resources of the teaching staff of the school are taxed very heavily. In the smaller schools post-graduate work probably should be confined to the summer months, when the undergraduates are having their vacation.

As regards the big schools, I do not feel at all certain whether it is better to offer post-graduate instruction only in the summer months or to carry it on during the whole year. There are good arguments to be advanced in favor of both plans. All detail concerning post-graduate instruction must be run just as carefully, and it must be considered just as important as the undergraduate teaching. The graduate student has left his practice and his family; he is making a good many sacrifices in an honest effort to improve himself. We should all take a personal interest in these men, and try to make their stays with us as pleasant and as profitable as possible.

There are only a few medical centres in the United States of sufficient size to give elaborate post-graduate instruction in pediatrics, and I suppose that the bulk of the instruction will be given in these centres; but it is possible even in smaller places to have weekly ward rounds or clinical lectures, to which the local practitioner may come. There are many men who would not be able to give up a month or several months to spend in continuous study in one of the big centres, who would easily avail themselves of a weekly clinic at the local children's hospital. In addition to the longer courses, this method of teaching has been used for some years in Boston, and it has been exceedingly popular. Different schools will probably adopt different methods and will cater to the various needs of different classes of men: this is as it should be. We have in America enough large pediatric centres so that any post-graduate student should be able to secure any kind of instruction in pediatrics, whether it be laboratory or practical, without any difficulty whatsoever.

THE NECESSITY OF A GOOD GENERAL EDUCATION FOR STUDENTS.

A thorough general education is essential to a doctor. He should be a cultured man; he should be able to *see clearly*, which after all, is the final purpose of education. We teach in the medical schools many facts, but the student cannot use these facts correctly or see them in their proper relationships unless he has been taught previously how to think. The difference between the educated and the uneducated man is the difference between straight and distorted thinking.

The standards for admission to the medical schools even now are none too high; in the past they were deplorably low, and immature young doctors were being turned out wholesale, who did not have even the rudiments of a general education. The purpose of college training is to teach the student how to think originally, how to appreciate facts in their proper proportion, to distinguish the essential from the non-essential, to have a wide vision instead of a narrow one. History, philosophy, biology, the languages, mathematics, everything that bears upon human progress—all have their share in this. It was not fitting that young boys with sometimes less than a high school training should take up such an enormously complicated study as medicine, a study in which so much fine discrimination is needed. Credulity is a concomitant of a lack of education, and it is due to the credulity of many of our poorly educated doctors that so much poor therapy is practised, that so many proprietary or semi-proprietary remedies are used, whose extravagant propaganda the credulous, non-thinking type of doctor accepts as gospel truth because he sees it on a printed page. Even with all our science in this modern era, we are not free from fads—there are epidemics of fadism as well as of disease, that sweep over our land, and there is need at present in medicine for much caution in accepting new therapeutic agents especially. The best guard against rashness in this respect is a high standard of education for doctors. Anyone who is continually seeing graduate students, many of whom graduated from poor schools where there were practically no standards for admission, is often struck by the surprising lack of thinking power that some of them show; they do not think logically, they have learned their medicine by rote rather than by acquiring a knowledge of principles and then applying specific facts in accordance with these principles; their formula is that for a certain disease a certain drug is given, they may or may not stop to think why, or just what they expect to accomplish by means of the drug; they practice superficially rather than by trying to dig under the outside crusts of their problems, by going back to principles rather than to rules; they lack a clear vision and a broad viewpoint. A partial remedy for all this is general education, and with it a development of the critical faculty. The vast majority of the medical students of today *are* unusually well educated, thanks to the reforms which have been going on in the last fifteen years, and I doubt if there is a more intelligent, better reasoning class of men anywhere than these same students of the better modern schools. They are being taught what medicine is; that it consists of more than giving a certain drug for a certain disease; by means of the basic medical sciences they are being taught the broad truths upon which medicine rests and the critical faculty, which does not allow them to believe all they see in print, which keeps them away from the irrational and the extreme; as educated men they can appreciate truth and detect error. In short, they are being taught, I hope, something of the philosophy of medicine.

In the words of William Osler, whom one may well call a great medical philosopher, and a tireless seeker after truth:

"The higher the standard of education in a profession, the less marked will be the charlatanism, whereas no greater incentive to its development can be found than by sending out from our colleges men who have not had mental training sufficient to enable them to judge between the excellent and the inferior, the sound and the unsound, the true and the half-true."

Original Articles.

ACUTE RESPIRATORY INFECTIONS AT THE BOSTON CITY HOSPITAL. FROM THE PNEUMONIA SERVICE.*

By Edwin A. Locke, M.D., Boston,
Visiting Physician, Boston City Hospital;

Henry M. Thomas, Jr., M.D., Boston,
Resident Physician, Boston City Hospital;
and
Dwight O'Hara, M.D., Boston,
Assistant Resident Physician, Boston City Hospital.

ORGANIZATION.

During the influenza epidemic of the fall and winter of 1918-1919 the need was felt for more adequate facilities for the diagnosis and treatment of the pulmonary complications arising in the influenza cases. A special fund of $3,000 was made available for the expense of such a service by His Honor the Mayor, and the service was put in operation February 3, 1919. So far as organization and equipment are concerned, the service was made an independent unit of the hospital with its own bacteriological and clinical laboratories under the Pathological Department, portable x-ray apparatus, special record system, etc.

The advantages of a separate pneumonia service were early apparent. First, all such cases should be segregated to prevent, as far as possible, danger of infection to other patients in the hospital. Second, the special technical study of this class of patients can, as a routine, be carried out as is not possible when patients are scattered throughout the hospital on the four regular medical services. Third, particularly careful observation and nursing are necessary with this group of serious, acute diseases which can be provided only when such patients are grouped in a few wards. Fourth, certain forms of treatment, such as the administration of serum, require expert training on the part of the resident physicians giving it. Fifth, the grouping of cases for study must inevitably stimulate those placed in charge of such a group to their best possible effort. Sixth, the assembling of all cases of a given disease in a few wards and on a single service is an immense advantage to all members of the medical staff in that it affords an opportunity for the observation of a relatively large number of cases under most favorable conditions. The same material is also more available for teaching.

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* Report of the work of the special service given at the hospital clinical meeting, April 25, 1920.

It was frequently found impossible in the admitting office to certainly differentiate between the cases of influenza and other acute pulmonary infections, hence practically all cases of pneumonia admitted to the hospital were also sent to the influenza service. The success of the work with the pneumonia cases was so evident that in June, 1919, when the influenza epidemic had died out it was unanimously voted by the medical staff to recommend to the Board of Trustees that the service be continued permanently as a special pneumonia service. As now organized the work is in charge of one of the visiting physicians of the hospital who is chosen by the medical staff each year. One or more of the visiting physicians or first assistant visiting physicians may serve as associate or assistant once each year for a period of not more than three months. The house staff consists of a resident physician and from two to four of the senior medical internes of the hospital. It is provided that each senior medical interne in the hospital is assigned to the pneumonia service for a period of two months.

A very satisfactory cubicle system is maintained by the use of screens 5½ by 7 feet, made of unbleached cotton stretched over a light wooden frame. This frame is held in place by tape at the head of the bed, thus being easily swung away from the foot to facilitate examination or care of the patient. But one screen is necessary for each bed. The importance of this cubicle arrangement is twofold. First, it has apparently been effective in preventing cross-infections, and second, the critically ill are virtually isolated. This method of isolation has proved so satisfactory that it has only very rarely been necessary to transfer a patient to a single room.

The cases of pneumonia developing empyema or requiring any minor surgical treatment are treated by a surgical service but remain in the wards of the pneumonia service, the patient thus having the advantage of both surgical and medical supervision. By vote of the senior staff all patients entering the hospital with empyema are admitted to the pneumonia service.

From February 3, 1919, to April 30, 1920, a total of 1078 cases were admitted to the service. Of these, 85 were influenza, 188 influenza and pneumonia, 164 bronchopneumonia, 447 lobar pneumonia, 29 empyema (admitted as such), and 165 miscellaneous conditions.

INFLUENZA AND INFLUENZA-PNEUMONIA.

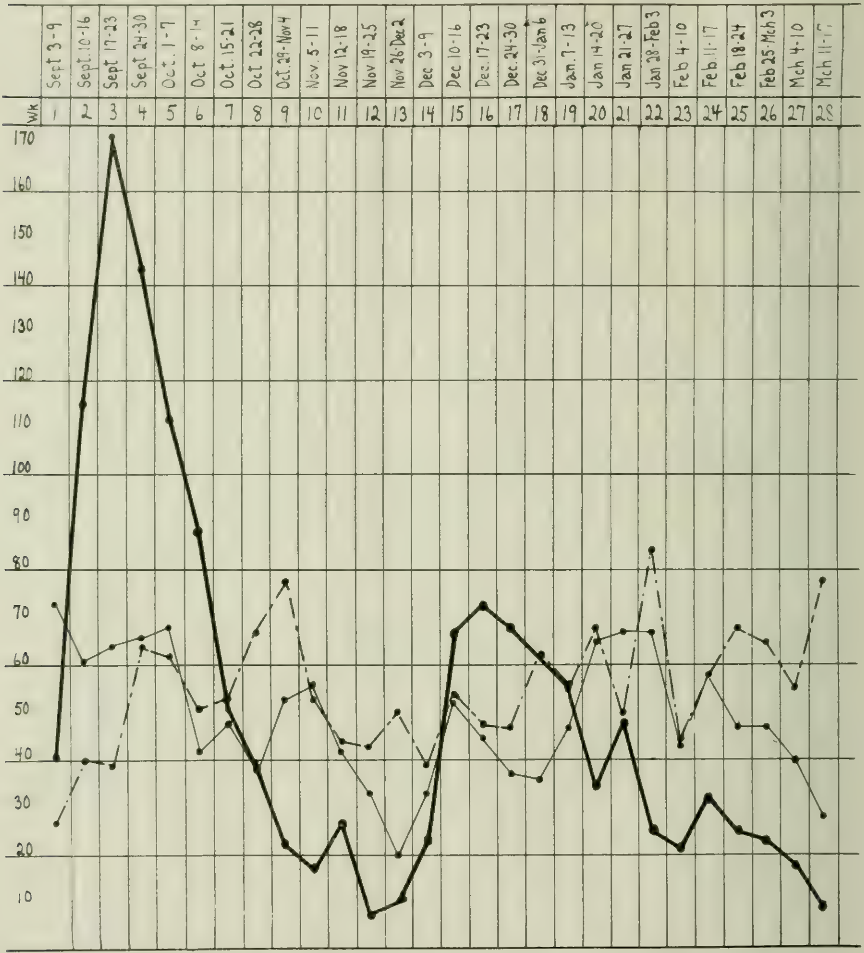
As the service was not organized until February 3, 1919, practically all of the cases of influenza were observed during two limited periods, namely, from February 3 to April 30, 1919, and January 16 to March 16, 1920. The former was following the period of the secondary wave of the great epidemic of 1918, and the second the recurrent epidemic of 1920. For this reason it is evident that the number of cases seen on the pneumonia service is too small to be of value in discussing the incidence and mortality from influenza. We have therefore combined our statistics with those of the other medical services. The two following charts are based on the figures for all cases of influenza entering the hospital during the epidemic periods, or a total of 1,744. They are designed to show by weeks the actual number of patients admitted, the percentage of complicating pneumonias and the mortality among the influenza-pneumonia cases.

Chart 1 covers the period from the beginning of the first epidemic, September 3, to the end of the minor epidemic of the following winter. The heavy solid line representing the number of patients admitted by weeks shows the characteristic abrupt rise to a maximum of 172 in the third week, a slightly less rapid fall during the next four or five weeks, then more slowly approaching zero, the main epidemic covering a period of six to eight weeks. This type of curve is commonly observed in epidemics of this disease.

After a period of approximately six weeks the curve is, to a considerable extent, duplicated. There is the same sharp rise during

Chart I.

Actual Number of Influenza Cases, Percentage of Pneumonia and Death-Rate among Pneumonias, September 3, 1919, to March 17, 1920. Arranged by Weeks. 1430 Cases.



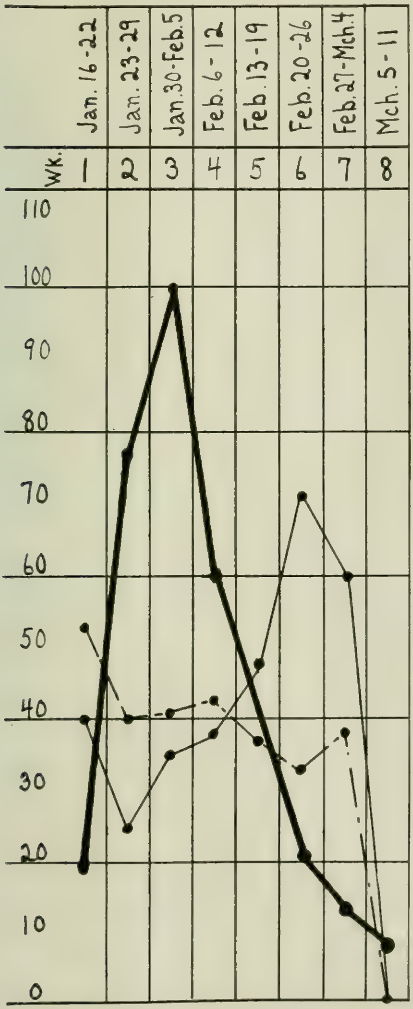
Black line=actual number of cases; Broken line=percentage of pneumonias; Light line=death-rate among pneumonias.

the first week, but it is to be noted that the maximum is reached more quickly and is only about one-third as great as the maximum in the main epidemic. The number of new cases does not diminish to any marked extent for the next month, and then descends much more slowly and irregularly.

The facts indicated by the remaining curves are clear, but their interpretation and significance very puzzling. It will be seen that the percentage of cases with pneumonia was at first low,—27 per cent.,—but rose rapidly until the ninth week, when it reached 77 per cent., this maximum occurring some weeks after the beginning of the subsidence of the epidemic. The decline was then rapid, but remained above 40 per cent., with the exception of a single week, when it fell to

Chart II.

Actual Number of Influenza Cases, Percentage of Pneumonia and Death-Rate among Pneumonias, January 16, to March 17, 1920. Arranged by Weeks. 341 Cases.



Black line=actual number of cases; Broken line=percentage of pneumonias; Light line=death-rate among pneumonias.

39 per cent. A very irregular curve, but one of the same general type, is shown during the secondary epidemic of December and January. Here again the percentage of pneumonia was highest some weeks after the decline in the epidemic, then fell abruptly, but remained above 40 per cent.

The death rate among the influenza-pneumonias, however, was highest during the first week and from then on the curve is almost exactly the reverse of the curve for the incidence of pneumonia. In other words, with a rapidly rising incidence of pneumonia among influenza cases there was a striking decline in the mortality. The death rate during the first week was 72.7 per cent., but by the eighth week had fallen to 38.5 per cent., and by the thirteenth to 20 per cent., which was the minimum for the entire epidemic period. With the onset of the secondary epidemic in December the death rate among the pneumonias again rose and after the decline in the epidemic in January, reached 66.5 per cent.

The number of deaths in the whole group of influenzas is essentially identical with that in the pneumonias as it seems probable that all fatal cases of the disease have a complicating pneumonia. Only four cases died without a diagnosis of pneumonia. The total death rate for the 740 influenza-pneumonias treated from September 3, 1918, to April 30, 1919, was 54.7 per cent.

Chart 2 covers the period of the minor epidemic of January and February, 1920. The curve showing the actual number of cases of influenza entering the hospital is an exact miniature of that for the first epidemic. The course of the incidence of pneumonia and the death rate in these cases, however, take an exactly opposite curve, namely, in the first epidemic the percentage of pneumonia increased steadily while the death rate declined, but in this last epidemic the percentage of cases gradually declined while the death rate rose rapidly after the third week. No secondary wave developed this year and after the rapid decline the disease gradually disappeared from the wards. The general mortality for the first week was only 21 per cent., but during the second week rose to 69 per cent. By the third week, however, it fell to 14 per cent. and remained low throughout the remainder of the epidemic. This marked difference in the death rate in the two epidemics is in accordance with clinical observations, the cases in the epidemic of 1920 being much more mild and developing fewer complications. From January 16 to March 11, 1920, a total of 341 cases of influenza were admitted, of whom 137, or 40 per cent., were complicated with pneumonia. No deaths occurred among the uncomplicated cases. The general death rate for the 137 influenza-pneumonias was 38 per cent.

In every instance among the 273 influenza and influenza-pneumonia cases treated on the pneumonia service where sputum could be obtained the sputum bacteriology was determined. The following table gives the results in the 162 cases in which the sputum was examined. Almost every case yielded two or more organisms.

Table I.—Sputum Bacteriology of 162 Influenza and Influenza-Pneumonia Cases.

Organism	Influenza	Influenza-Pneumonia
Pneumococcus, Type I	0	3
Pneumococcus, Type II	0	1
Pneumococcus, Type III	2	16
Pneumococcus, Type IV	21	77
Streptococcus, hemolytic	1	21
Streptococcus, non-hemolytic	0	12
Streptococcus viridans	2	9
Staphylococcus aureus	0	18
Bacillus influenzae	14	73
Micrococcus catarrhalis	1	4

These cases were chiefly from the 1920 epidemic. Among the pneumonias of this group the organisms most commonly associated were pneumococcus type IV and the bacillus influenzae. The next most frequent finding was some combination of pneumococcus type III, staphylococcus aureus and hemolytic streptococcus. The almost entire absence of types I and II is striking.

In several instances what appeared to be a typical lobar pneumonia followed an unmistakable attack of influenza. We have often experienced great difficulty in differentiating a confluent bronchopneumonia occurring with influenza from a true lobar pneumonia. By reason chiefly of the more positive character and severer type of the influenza in the 1918-1919 epidemic less difficulty of this sort was experienced. A considerable series of cases which have been examined in the Pathological Department and the Medical Examiner's Laboratory have grossly and microscopically shown every possible gradation from the incomplete bronchopneumonia to the typical lobar form. If it has so frequently been impossible at the autopsy table to make a positive diagnosis of the variety of pneumonia it is not surprising that we have experienced difficulty at the bedside. In the group of 188 influenza-pneumonias 35.6 per cent. died.

The remarkable results obtained by McGuire and Redden (*Jour. A. M. A.*, 1918, lxxi, 1311; 1919, lxxii, 709) in the fall of 1918 with the use of convalescent human serum in cases of influenza-pneumonia encouraged us to employ the method. Unfortunately the service was not organized until after the epidemic had largely subsided and the number of cases available during the secondary epidemic in the winter and spring of 1919 afforded only a very limited opportunity for testing the value of the serum treatment. In conducting such an experiment we felt that the results could be of no scientific value unless accurately controlled. Cases were therefore paired on the basis of age, sex, length of illness, the character of the signs and severity of the symptoms, one case only of each pair receiving the inoculations. There were in all twenty-two of each group and the total number of deaths in each was ten, or, roughly, 45.4 per cent. Careful observations of the cases and their controls failed entirely to afford any evidence of benefit in the treated cases. The series is obviously too small to warrant any definite conclusions. On the basis of such a limited experience with the convalescent serum treatment we do not feel justified in condemning it as of no value. It is only possible to state that we have failed to obtain any positive results. It was our intention to continue the investigation during the past winter, including careful bacteriological studies of the donors and patients. During the epidemic of 1920 we succeeded in obtaining two liters of serum, but the atypical forms of pneumonia made the diagnosis of influenza-pneumonia very uncertain and this together with the short duration of the epidemic prevented us from securing the necessary clinical material.

BRONCHOPNEUMONIA.

Primary bronchopneumonia in adults was, before the war, very rarely observed in hospital practice, but during the past few years has been seen with surprising frequency, as evidenced by the fact that among 1,078 cases treated on the pneumonia service in fifteen months, 164 were of this type. In the fall of 1917 large numbers of bronchopneumonia cases, for the most part due to the hemolytic streptococcus, and often complicated by a streptococcus empyema, were reported from the southern army cantonments. These early cases usually developed as a complication of measles, though in some camps there was an epidemic of primary pneumonia of this type. During the spring of 1918 similar cases were observed in large numbers in other army camps scattered all over the country and to a less extent in civil communities as well. With the appearance of the influenza epidemic in the fall of 1918, the disease became widespread and was met with in all civilian hospitals. Throughout the winter of 1919 streptococcus bronchopneumonia was again very prevalent in the civilan population and an unusual opportunity was offered for the study of the disease side by side with lobar pneumonia. Its early recognition is especially important by reason of the frequency of a complicating streptococcus empyema which appears very early in its course, often developing on the second to fourth day of the pneumonia.

Thirty of these cases were studied intensively during December, January and February of the past winter. These were considered examples of primary bronchopneumonia as distinguished from the bronchopneumonia secondary to influenza, a differentiation which is exceedingly difficult and often impossible during a period when influenza is epidemic, as was the case during the past winter. In a majority of this group the history was quite characteristic. The onset was gradual, beginning with a cold or sore throat associated with malaise. The usual story was that the patient continued at work for a few days to a week until the cough, malaise, headache, fever and pain in the chest became so severe that he was obliged to go to bed. In other words, in contrast to lobar pneumonia the infection in the lungs seems to follow an infection of the upper respiratory tract. The prodromal stage is variable, lasting from one to several days or even two weeks. The average in the thirty cases studied was four days. There were five cases which did not conform to this type. In these the onset was abrupt, with a chill, cough, and pain in the chest. The cough appears early, is at first painful and unproductive, but soon is accompanied by a mucoid sputum which is often blood tinged but never conspicuously tenacious as in lobar pneumonia. Pain is a common and often distressing symptom. It is usually localized over the lower half of the chest, rarely under the sternum. Pains in the back and legs are more frequent than in lobar pneumonia but less prominent than in influenza. A pleural rub is occasionally heard. Delirium is much more rare than in lobar pneumonia. Frequently during the course of the disease chilly sensations are felt and not uncommonly an actual rigor occurring some days after the appearance of the symptoms in the upper respiratory tract seems to mark the onset of the involvement of the lungs. Dyspnoea of some degree is almost always present and frequently very severe. The temperature is elevated but less regular than in ordinary pneumonia and nearly always falls by lysis. The pulse is elevated and respiration much increased, in the cases of severe dyspnoea sometimes reaching sixty or seventy. Prostration is often profound. Cyanosis is occasionally seen. Herpes is rare.

The following table gives the symptoms in their order of frequency in the cases studied:

TABLE II.

Cough	23
Pain in the chest	21
Headache	16
Chill	14
Fever	13
Bloody suptum	12
Pain in limbs	9
Anorexia	8
Dsypnoea	8
Chilliness	5
Vomiting	5
Tiredness	5
Weakness	4
Sore throat	4
Back-ache	4
Eye-ache	4
Sub-sternal pain	1

These symptoms as tabulated do not differ very materially from those of lobar pneumonia, but the mode of onset as emphasized above is as a rule quite distinct.

The sputum bacteriology of the entire group of 164 bronchopneumonias is given in the following table:

TABLE III.—BACTERIOLOGIC EXAMINATION OF THE SPUTUM.

Pneumococcus, Type I	2
Pneumococcus, Type II	4
Pneumococcus, Type III	18
Pneumococcus, Type IV	43
Streptococcus, hemolytic	30
Streptococcus, non hemolytic	2
Streptococcus viridans	14
Staphylococcus aureus	19
Bacillus influenzae	44
Unclassified and unknown	53

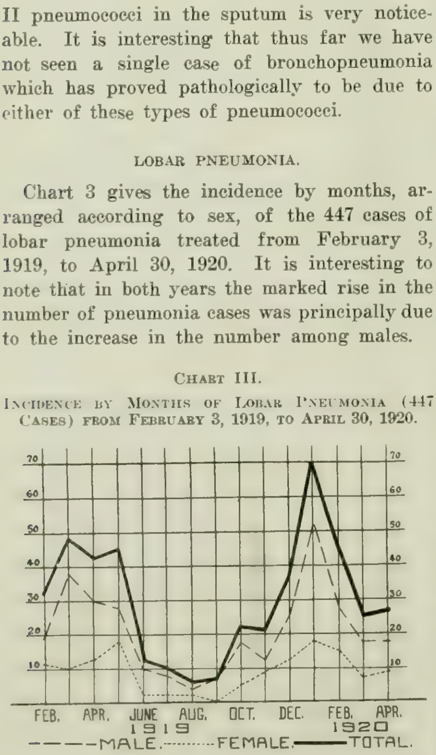
The results are somewhat confusing, as in many cases several organisms were present. Any final grouping of all cases according to the organism found is impossible. The above described variety due to the hemolytic streptococcus gives the most definite clinical picture and seems to represent a distinct group. The non-hemolytic streptococcus was found in only two cases. It is generally accepted that the streptococcus viridans may be an occasional cause of bronchopneumonia, but its presence in the sputum is not sufficient proof of its etiological importance. In several instances including both fatal and non-fatal cases, we have obtained the organism in anti-mortem lung puncture. The influenza bacillus was the most frequent single organism found, but it has almost invariably been associated with some other pathogenic bacteria. Types III and IV pneumococci were obtained very commonly, as is shown in the above table. The former seems to be the organism present in a majority of the cases of the "migratory" form of bronchopneumonia. One of the most interesting groups is that due to the staphylococcus aureus. They conform very closely to the clinical and pathological type described by Chickering and Park (*Jour. A. M. A.*, 1919, LXXII, 617). Four of this last mentioned group developed empyema, two of whom died. The rarity of types I and II pneumococci in the sputum is very noticeable. It is interesting that thus far we have not seen a single case of bronchopneumonia which has proved pathologically to be due to either of these types of pneumococci.

LOBAR PNEUMONIA.

Chart 3 gives the incidence by months, arranged according to sex, of the 447 cases of lobar pneumonia treated from February 3, 1919, to April 30, 1920. It is interesting to note that in both years the marked rise in the number of pneumonia cases was principally due to the increase in the number among males.

CHART III.

INCIDENCE BY MONTHS OF LOBAR PNEUMONIA (447 CASES) FROM FEBRUARY 3, 1919, TO APRIL 30, 1920.



The total case fatality for the 447 cases was 25.5 per cent. The death rate among 574 cases of lobar pneumonia treated in the City Hospital during the year 1916 was 39.4 per cent. and for 774 treated during the year 1917, 36.3 per cent. The well-known variation in the virulence of the infection from year to year and the resulting variation in the death rate may to some extent explain the sharp drop to 25.5 per cent., but is not sufficient to fully account for it. Likewise the reduction in the number of deaths in type I cases treated by antipneumococcus serum to be discussed later is obviously a factor. We believe it not unreasonable to assume that the advantages resulting from the treating of all cases of pneumonia on a single service has contributed in lessening the number of fatal results.

A type pneumococcus was recovered in 335 cases. In Table IV the bacteriologic findings are combined to show the incidence of the various type pneumococci in two sexes.

TABLE IV.—FOUR HUNDRED AND FORTY-SEVEN CASES OF LOBAR PNEUMONIA ARRANGED TO SHOW RELATIVE FREQUENCY OF THE TYPES OF PNEUMOCOCCI ACCORDING TO SEX.

	TYPE PNEUMOCOCCUS				UN-CLASSI-FIED	MORTALITY PER CENT.	TOTALS
	I	II	III	IV			
Male	87	62	31	64	73	26.5	317
Female ..	29	9	18	35	39	23.0	130
TOTALS ..	116	71	49	99	112	25.5	447

It will be noted that males suffered relatively more from types I and II, and females relatively more from types III and IV infection. A possible explanation of this interesting difference in the sexes with respect to the type organism found is that types I and II are present only in the mouths of individuals convalescing from such infection or recently in contact with types I and II cases, while types III and IV are very commonly found in the mouths of healthy individuals (Dochez and Avery, *Jour. Exper. Med.*, 1915, XXII, 105; Stillman, *Jour. Exper. Med.*, 1916, XXIV, 651). The women who spend relatively much more time at home do not come in contact with types I and II carriers as do the men, and consequently when pneumonia develops in women the infection is more often due to the common mouth organisms.

During the winter months infection with the various types of pneumococci seem to occur in waves suggesting small epidemics, but no epidemiological investigations were undertaken and this occurrence may be purely a coincidence.

Among the 353 cases of lobar pneumonia in adults the type pneumococcus was determined in 293. These results are given in Table V.

TABLE V.—LOBAR PNEUMONIA IN ADULTS (293 CASES).

Type Pneumococcus	No. Cases	Per Cent.	Mortality Per Cent.
I	105	36.0	22.8
II	66	22.8	31.8
III	45	15.0	46.2
IV	77	26.2	27.2

The relative frequency of the various types is not unusual and the mortality in the different groups does not show any significant variation from the figures for most other clinics, except for a rather high death rate in type IV cases.

Lobar pneumonia as seen in infants and children was a comparatively mild disease. Considerable difficulty was encountered in obtaining sputum for examination from the younger children, and in consequence only 42 of the total of 94 patients under fifteen years were typed. The results are as follows:

TABLE VI.—LOBAR PNEUMONIA IN CHILDREN (42 CASES).

Type Pneumococcus	No. Cases	Per Cent.	Mortality Per Cent.
I	11	26	9.9
II	5	12	0.0
III	4	10	0.0
IV	22	52	4.9

The most noteworthy feature of these figures is the high percentage of type IV infections. The mortality per cent. is misleading. Only two of the above group died, one with type I and the other with type IV infection. A complicating laryngeal diphtheria in the first and acute nephritis and pleuritis in the second probably accounts for the fatal termination. Only two of the fifty-two cases in which the organism was unknown died. By reason of the extremely low mortality no antipneumococcus serum treatment was attempted in infants under five years. The few cases of older children treated with serum all recovered.

From February 3, 1919, to April 30, 1920, a total of 132 pneumonias were proved to be due to type I pneumococcus. With a very few exceptions all cases, including the moribund ones, were treated with the antipneumococcus serum as soon as the laboratory report was received, provided the patient had not had a crisis. The total treated by this method was 75, and the untreated 57. The technique used in the administration of the serum is the same as that developed at the hospital of the Rockefeller Institute (Monograph No. 7, Rockefeller Institute for Medical Research, 1917).

The paramount importance of the early administration of the serum is well shown in the following table:

TABLE VII.—DEATH RATE AMONG SERUM TREATED CASES.

	No. Cases	No. Died	Mortality per Cent.
Treatment started on 2nd day	1	0	0.0
Treatment started on 3rd day	7	0	0.0
Treatment started on 4th day	13	2	15.4
Treatment started on 5th day	13	1	7.7
Treatment started on 6th day	9	2	22.2
Treatment started on 7th day	13	2	15.4
Treatment started on 8th day	8	3	37.5
Treatment started on 9th day	4	1	25.0
Treatment started on 10th day	3	1	33.3
Treatment started on 11th day	1	1	100.0
Day of disease not known	3	0	0.0
TOTALS	75	13	17.3

It seems very significant that among the fifty-six who were treated during the first week of the disease only seven, or 12.5 per cent., died. The death rate for the whole group of seventy-five treated cases was 17.3 per cent. and for the 57 untreated 26.3 per cent. These results, which accord with the experience of others, are strong evidence of the efficacy of serum treatment of type I pneumonia. The fact should be most strongly emphasized that the earlier the treatment is begun the more prompt and favorable are the results. It seems quite questionable if this method is of any value when employed later than the seventh day. Often after a single intravenous injection of 100 c.c. the temperature fell to normal and remained so. In other cases several injections at eight-hour intervals were necessary. The largest amount of serum given was nine doses of 100 c.c. each. The average of serum per patient for the seventy-five treated cases was 197 c.c.

We have noted, as has previously been observed, that those patients who have a marked thermal reaction following the serum injection seem to derive more benefit from the treatment than those who have no reaction. Bull and Bartnal (*Jour. Exp. Med.*, 1920, XXXI, 233) have shown that the inhibitory action of whole blood on the growth of pneumococci is partly dependent on the presence of a sufficient number of leucocytes. These two considerations led us to study the leucocyte reaction following the use of the antipneumococcus serum. Eight cases were carefully studied with reference to the course of the leucocyte curve immediately following this form of treatment. Seven of the eight patients experienced a prompt thermal reaction after the injection and in five of the seven the reaction was accompanied by a severe leucopenia followed by a leucocytosis. This same course in the leucocyte curve has been observed to occur coincidently with a similar thermal reaction following the injection of other foreign proteins (Gay. Typhoid Fever. The Macmillan Co., N. Y., 1914, p. 168; Scully, *Jour. A. M. A.*, 1917, LXIX, 20). The five cases which reacted in this way showed an immediate striking improvement after one or two doses of serum. In the sixth case the white count was 29,000 per c.mm. before treatment and no essential change occurred in the count after the chill following the serum injection. The temperature fell rapidly, reaching normal in twenty-four hours. A few hours after the temperature reached normal the number of leucocytes diminished. In the seventh case the leucocyte count fell from 23,000 per c.mm. to 13,000 per c.mm. after the first injection and did not increase during the remainder of the treatment. Five doses of serum were given before the temperature reached normal. The single case in which no rigor took place had a white count of 11,000 per c.mm. The count remained low and the patient died after the fifth dose of serum.

Our observations seem to indicate:

1. That patients who have a chill following intravenous serum treatment usually show a few hours later a hyperleucocytosis and these cases react more favorably than do those who have no chill.

2. In cases with a high leucocyte count the maintenance of the leucocytosis or an increase following serum treatment is to be interpreted as a very favorable prognostic sign.

3. Patients whose white count is markedly depressed by the serum or in whom an original leucopenia is not replaced by a leucocytosis after the injection do badly under serum treatment.

We believe it reasonable to conclude that the presence of an increased number of leucocytes is a necessary part of the mechanism of recovery in cases treated with antipneumococcus serum. It seems probable that the cases in whom the administration of the serum fails to produce an increased leucocytosis or is followed by a depression in the number of white cells suffer from a degree of toxemia too great to permit a reaction to the serum. The value of this foreign protein reaction is an interesting subject for experimental study.

BLOOD CULTURES.

In all a total of 302 blood cultures were made with positive results in 21.2 per cent. This small percentage of positive results is largely due to the considerable number of influenza-pneumonia and bronchopneumonia cases included in the series. A summary of the positive findings is given in Table VIII.

Table VIII.—Positive Blood Cultures.

	No. Cases	Deaths	Mortality per Cent.
Pneumococcus, Type I..	18	10	55.5
Pneumococcus, Type II.	9	7	77.7
Pneumococcus, Type III	12	11	92.4
Pneumococcus, Type IV	10	7	70.0
Streptococcus, hemolytic	6	6	100.0
Streptococcus viridans.	1	1	100.0
Staphylococcus aureus.	8	6	75.0
Bacillus coli communis	1	1	100.0

The rather surprising fact that of eighteen type I pneumococci with positive blood culture only ten died is probably to be explained by the fact that fourteen were treated with antipneumococcus serum, seven recovering.

WASSERMANN REACTION.

False positive Wassermann reactions obtained during the febrile period of acute infections have been mentioned (Golden, G. M.; *Hahneman Month.*, Phil., 1918, LIII, 728). We have taken blood for this test in 363 cases. Of these 320 were negative, 33 were persistently positive, four were doubtful, and only six were falsely positive, *i.e.*, positive during the febrile stage and negative during convalescence. That these are actually false positive reactions can be proved only by the absolute exclusion of syphilis. We are not in a position to do this and we have, therefore, no statements to make except that (1) false positive Wassermann reactions during the febrile period of pneumonia are rare; (2) latent or cured syphilis may possibly give a positive reaction only during the febrile period.

LUNG PUNCTURE.

A report of the study of 73 lung punctures performed in lobar pneumonia cases on this service was recently published. (Thomas, H. M., Jr., and Parker, F., Jr., *Arch. Int. Med.*, 1920, xxvi, 125.) This procedure was done to hasten or confirm the bacteriological diagnosis and proved to be of considerable value clinically. The question has perhaps naturally been raised, Is this method of examination free from dangers to the patient? Theoretically, the infection of the pleura might result or the injury to the lung by the needle possibly lead to local softening and abscess. Empyema developed in only two of the seventy-three cases, or 2.7 per cent., an incidence rate which is less than half of that for the entire group of 447 lobar pneumonias. Lung abscess did not develop in a single instance, neither was any other ill effect ever observed. Furthermore, if carefully done, the introduction of a needle into the lung causes the patient almost no pain. On the basis of this experience we feel justified in concluding that lung puncture is an entirely innocuous procedure.

It was found that the mortality of cases yielding viable organisms by lung punctures after the fifth day of disease was 56 per cent., whereas cases yielding no organisms by lung puncture, irrespective of the day of the disease, with only two exceptions, recovered, or a mortality of 6.5 per cent. Positive lung punctures were obtained, however, just before, during and immediately following crisis in a few cases. These facts seem to indicate that destruction of the organisms is the first step in the process of recovery, but also that crisis may occur before the organisms have been entirely killed, or not until several days after. That definite anti-bacterial properties are developed in the blood has been shown by many investigators but that these properties are in any way important in combating the toxic manifestations of lobar pneumonia has not been claimed.

Our results seem to indicate the existence of both an anti-bacterial and detoxifying mechanism which are active in the process of recovery which act, in a measure, independently. The rate of development of anti-bacterial bodies, on the one hand, and the detoxifying mechanism, on the other, may occur simultaneously or not, according to factors which influence their separate production differently. The work of many investigators suggests that detoxification may occur by a sudden change in the ferment-antiferment balance, but the possibility of a true toxin-anti-toxin reaction has not been definitely ruled out.

EMPYEMA.

During the period covered by this report a total of sixty-six cases of empyema were treated. Table IX gives the results of bacteriological studies of the exudate, the type of pneumonia and the mortality of this group.

TABLE IX.—SIXTY-SIX CASES OF EMPYEMA GROUPED ACCORDING TO THE TYPE OF PRIMARY PNEUMONIA, SHOWING THE ORGANISM FOUND AND THE MORTALITY IN EACH.

	LOBAR PNEUMONIA		BRONCHO-PNEUMONIA		POST-PNEUMONIA		TOTAL		
	No.	Died	No.	Died	No.	Died	No.	Died	Mort.
Pneumococcus, Type I	14	2			6	1	20	3	15.0
Pneumococcus, Type II	3	2					3	2	66.6
Pneumococcus, Type III	1	0			1	0	2	0	0.0
Pneumococcus, Type IV	5	0			1	1	6	1	16.6
Pneumococcus unknown					2	0	2	0	0.0
Streptococcus hemolyticus			10	7	11	0	21	7	33.3
Streptococcus non-hemolyticus			1	0	3	0	4	0	0.0
Staphylococcus aureus			2	2	2	0	4	2	50.0
Undetermined					4	0	4	0	0.0
TOTAL	23	4	13	9	30	2	66	15	22.7

It will be seen from the above table that all of the empyemas following lobar pneumonia were due to the pneumococcus, while in the case of empyemas occurring with bronchopneumonia none was caused by this organism. Two cases of this second group showed staphylococcus aureus but all the remainder were due to the streptococcus. The first group comprises twenty-three and the second group thirteen cases. The thirty cases grouped in the tables under post-pneumonia were all admitted to the hospital for empyema and too late in the course of the disease to determine the form of the primary pneumonia. So constantly, however, does the pneumococcus empyema complicate lobar pneumonia and the streptococcus empyema a bronchopneumonia that there would seem to be but little if any doubt that the two cases showing pneumococci in the pleural exudate were secondary to lobar pneumonia and a majority of the remaining twenty which showed streptococci were secondary to a bronchopneumonia. These figures are in accord with the general conception of empyema as conforming to two most common types, namely, (1) pneumococcus empyema following lobar pneumonia, and (2) streptococcus empyema following bronchopneumonia.

Among the total 447 lobar pneumonia cases 5 per cent. developed empyema while the 352 bronchopneumonias (including the 188 influenza-pneumonias) showed only 3.7 per cent. incidence of empyema. The former is within normal limits but the latter seems surprisingly low.

The mortality in the group of thirty-two pneumococcus empyemas was 18.1 per cent. and in the group of twenty-five streptococcus empyemas 28 per cent. The high mortality in the second group is usual and is probably due chiefly to three factors; first, the general virulence of the infection; second, the early recurrence of the empyema which, as a rule, develops while the intrapulmonary process is in an active stage, and third, the frequency of other complications due to the same organism, such as infection of other serous cavities and the mediastinum, abscess of the lung, endocarditis, meningitis, nephritis and septicaemia. If we take the figures for the known group of twenty-three lobar and thirteen bronchopneumonia cases we find a mortality for the empyema of 17 per cent. for the first and 69 per cent. for the second. The mortality for the entire group of sixty-six cases was 22.7 per cent. and for the fifty-five operated cases 20 per cent. There seem good reasons for assuming that the epidemic of influenza and the extraordinary prevalence of broncho-pneumonias in the period to which these figures apply have been factors of considerable importance in maintaining this relatively high death rate in empyema.

In deciding when the patient with empyema should be operated we have been guided by two considerations, (1) the type of infection, and (2) the general condition of the patient, especially with reference to the stage of the pneumonia. As a rule, in the case of pneumococcus empyema, when frank pus is present, an immediate operation has been advised provided the condition of the patient is satisfactory. Unquestionably the patient's chances are much better if he has reached the point of at least early convalescence from his pneumonia. Fortunately infection of the pleura with the pneumococcus is usually a late complication and empyema does not in consequence develop until the acute stage of the pneumonia has passed. When severe toxic or mechanical symptoms are evidently due to the empyema then drainage of the cavity should be effected without delay.

Empyema due to the streptococcus very frequently develops during the early stages of the bronchopneumonia and the situation is then a serious one. The infection appears suddenly and the effusion often accumulates very rapidly. Early operation in these cases means a very high mortality as the patient is apt to be extremely toxic and in no condition to stand surgical treatment. Aspiration often affords the patient great relief and the toxemia promptly diminishes. By simple aspiration of the chest every one to three days it is usually possible to postpone the operation until the patient's condition is more favorable.

A discussion of the operative technique and the results obtained with the various methods of drainage will be given in a surgical report now in preparation.

INTRACISTERN INJECTIONS OF SALVARSANIZED SERUM IN NEUROSYPHILIS.*

By Henry McCusker, M.D., Providence, R.I.

[Clinical Laboratory, Butler Hospital.]

Since the beginning of the use of salvarsan therapy, Butler Hospital has made a special effort to overcome the previous unfavorable results in neurosyphilitic treatment. Intravenous, intraspinous, and intraventricular methods have been used. At first intravenous therapy alone was the rule. Later on the method of Swift-Ellis was adopted. In 1916 a publication was issued from this hospital on this latter method of treatment in general paresis and great results were predicted. A separate publication will show the unfavorable end-results in these cases.

We have also tried intensive intravenous therapy with routine lumbar drainage of the spinal fluid. On several occasions intraventricular therapy has been used.

Every one of these methods offered hope at first but our statistics show that they were disappointing in their results. The introduction into the ventricles of salvarsanized serum was the most promising but this necessitated trephining and was not resorted to in early cases on account of the disfiguring trephine scars. It still has merit.

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* Read before the Providence Medical Society at a regular monthly meeting.

The excellent work of Ayer and others in showing the ease with which the cisterna magna can be drained in meningitis and other diseases opens up a new avenue of approach in the treatment of neurosyphilis. We have attempted, therefore, cistern puncture with the replacement of the fluid by diarsenolized serum.

I am presenting the following case, by way of preliminary report, to show the application of the method and with the hope that it may stimulate like work by others. The case selected is that of a patient who has a definite history of syphilis of long duration and who, in addition to the routine treatment following the primary lesion, had intraspinal therapy several years later for the relief of tabetic pains. For the past several years he has had treatment at one of the favorite Springs. At the present time his blood Wassermann is negative and the spinal fluid Wassermann is ++++. In addition to these serological findings he also has somatic signs of neurosyphilis.

On account of the patient's activity, light chloroform anesthesia was used. The patient was placed on his side and his head flexed on his chest with the occipital protuberance on the same horizontal plane as the spinal column. An ordinary lumbar-puncture needle of 18-gauge and graduated in centimetres was used. The technique used in the puncture is the same as that in use by Ayer at the Massachusetts General Hospital.

By palpation with the thumb a depression may be felt below the occipital protuberance in the median line. By pressure the spine of the axis may be palpated and just above it "a definite soft spot may be felt," which is the area between the lower margin of the base of the skull and the spine. With the thumb of the left hand pressing firmly into this depression, the needle in the right hand was introduced into the skin in the median line of the back of the neck and in the space between the base of the skull and the axis. The direction of the needle was slightly upward and in the line of a plane passing through the glabella and the upper edge of the external auditory meatus. As the needle was pushed forward, the resistance of the dura and of the posterior occipito-atlantoid ligament, which extends between the posterior margin of the foramen magnum and the posterior arch of the atlas, were felt plainly to be overcome. With the needle inserted at a distance of 5 cm. fluid was obtained. After estimating the pressure (140 mm.), 15 cc. of fluid was withdrawn and 15 cc. of diarsenolized serum was introduced slowly by the gravity method. The patient recovered from the anesthesia while on the table and has suffered no ill after-effects.

Cadaveric and living experimentations have shown that a needle inserted to a depth of 4 to 5 cm. would enter the cistern and allow over 1 cm. clearage of the medulla.

To some men occipito-atlantoid puncture may appear as a radical procedure but in the light of the experimental work of Ayer, Wegeforth, and Essick, at the Army Neurosurgical Laboratory and of the practical work of Ayer at the Massachusetts General Hospital, it appears as a procedure with a percentage of danger no greater than that in lumbar puncture.

SUMMARY.

1. Cistern puncture offers another route of application in the method of therapy in syphilis of the central nervous system.
2. It gets the serum nearer to the seat of the disease.
3. It is easier to accomplish than a spinal tap.
4. It offers no more danger than rhachicentesis.

ORCHITIS IN MUMPS.

By Conrad Wesselhoeft, M.D., Boston.

Visiting Physician, West Department (contagious.), Massachusetts Homeopathic Hospital.

[From the Evans Memorial Hospital, Boston.]

(Continued from page 461.)

ATROPHY OF THE TESTICLE.

Within four weeks to six months after the acute orchitis, an examination of the genitals may reveal a diminution in the size of the affected testicle and a change in the consistency, which may be roughly described as a softening or increased compressibility. An atrophy has taken place as the result of the necrosis incurred during the acute stage, the degree of atrophy depending upon the amount of destruction at this time. Stolz[68] reports a case of complete atrophy of the testicle where castration was performed for relief of symptoms. Sections showed a general and equal necrosis, which he considers must have taken place suddenly and in a short time. There was fatty degeneration in the center with partial hyaline degeneration at the periphery. Hall[45] studied a mumps atrophied testicle found at autopsy.* The epididymis and vas deferens were normal. The testicle was distinctly diminished in size, the tunica vaginalis was normal, and the surface of cut sections had a granular appearance. Histological examination revealed areas of healthy tissue with the seminiferous tubules carrying on normal spermatogenesis and the production of countless spermatozoa. The atrophied portions showed a fibrosis, with partial and complete destruction of the seminiferous tubules, often surrounded by a hyaline limiting membrane, *membrana limitans interna*. He describes the condition as *zarte Fibrosis*, and suggests that the numerous cases of this condition in the testicle found at autopsy are probably in the majority of incidences the result of mumps.

Dieulafoy[69] gives the following account of the findings of an earlier author:

> "Malassez had occasion to examine an atrophied testis. The epididymis was healthy; the seminiferous tubules were reduced to half of their size; some were converted into cords, while others presented some epithelial débris at their center; so that the lesion was a kind of parenchymatous orchitis, the vessels and connective tissue being practically spared."

In the great majority of cases in which atrophy develops there are no symptoms except the diminution in size of the gland, which, if slight, may entirely escape the notice of the patient. In some cases, however, the patients complain of a vague disagreeable sensation in the degenerated testicle, and in a few cases we get intense neuralgic pain. Others show a temporary decrease of sexual appetite with a diminished ability to perform coitus, or actual sterility may take place. Still more rarely we have a tendency to the development of a condition described as "feminism." These marked effects upon the sexual function are invariably the aftermath of severe double orchitis. In general, it may be stated that the more severe the orchitis the greater the tendency to subsequent atrophy, and also that the degree of atrophy is proportional to the severity of the symptoms of the orchitis. This, however, is by no means the rule, since marked atrophy of a testicle may develop from a comparatively mild orchitis so far as pain is concerned. It is barely possible that the strain of the infective organism may have some bearing on the incidence of atrophy, just as it may be concerned in the incidence of the orchitis itself, as shown by the variance in different epidemics and even during the same epidemic.

The discrepancies in the reports of different observers suggests a wide variation in the conception of what constitutes atrophy. Probably any change in the consistency of the testicle which can be determined any time after six weeks from the acute stage, constitutes the results of necrosis, and should be termed atrophy. Many authors reserve the term atrophy for an appreciable diminution in the size of the testicle. Consequently the incidence of atrophy in the sense of anything from partial to complete is probably much greater than the sum total of the statistics which I have collected. It need not be inferred, however, that orchitis always results in an appreciable necrosis, because, so far as careful examination can determine, a testicle which has swollen to twice its original volume may return to its normal size and consistency and remain so.

From the accompanying table it will be seen that out of 347 cases of orchitis, a subsequent examination revealed the development of atrophy in 190 of these cases or in 54.7%.

The degree of atrophy can be gauged only approximately. Thus, Settekorn[71] found that out of twelve atrophies, one testicle was "completely atrophied," three testicles showed a reduction to one-third their original volume, and eight showed an appreciable reduction with softening. Laurens,[29] out of sixteen atrophies, found the testicle reduced to three-quarters of the original volume in two cases, to one-half in seven cases, and to one-quarter, together with a softening of the substance of the gland, in seven cases. Among these sixteen, nine showed more or less decrease in sexual appetite, three showed considerable loss of sexual powers, and six showed an appreciable loss of the same. Gerard* reports that in one case of double

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* In this case the patient had had orchitis with mumps within a year of his death, which followed an operation on the intestines.

* Gerard[34], *op. cit.*, p. 562.

TABLE V.

TESTICULAR ATROPHY FOLLOWING MUMPS ORCHITIS.*

AUTHOR	REFERENCE	ORCHITIS	ATROPHY
Settekorn	71	13	12
Soltmann	23	9	5
Granier	24	115	51
Servier	26	26	12
Martin	27	9	6
Laurens	29	32	16
Jouloux	30	14	14
Chauvin	31	16	6
Jourdan	32	11	10
Gerard	34	13	6
Chatain†	1	9	3
Dogney†	1	27	27
Madamet	33	7	4
Calmette	28	10	3
Antony	37	7	0
Helber	39	4	4
Sorel	56	15	6
Heller	61	10	5
TOTAL		347	190

* In this table I have been careful to give only the number of cases of orchitis which each author examined later for atrophy. The examinations were made anywhere from six weeks to four years after the orchitis took place. With the possible exception of Chatain, these are all from military sources.

† Comby collected 163 cases of orchitis followed by 103 cases of atrophy (63%). Except for Chatain and Dogney, the original articles have been found and the figures taken from them.

Kocher[70] states that atrophy occurred in 23 cases out of 79, but it is not clear that these were original, or whence he obtained the figures. He cites Lawrence as giving 16 atrophies out of 32 cases of orchitis, which are probably the figures of Laurens. No reference is given. Consequently, I do not include Kocher's figures.

atrophy the function was diminished but not completely abolished.

An instance of sterile marriage as the result of mumps is recorded by Giovanni.[72] The husband, aged 30, was a healthy and robust peasant with nothing of apparent importance in his past history. At 26 he had married a healthy and robust girl whose past history was also negative. As the marriage proved sterile the wife was subjected to all sorts of gynaecological treatments, but to no avail. Finally the seminal discharge of the husband was examined microscopically and found to be "absolutely sterile." A more careful past history then disclosed that at the age of 16 the husband had had a severe parotitis epidemica complicated by a bilateral orchioepididymitis. Careful examination revealed a considerable degree of atrophy of both testicles with induration of the epididymis.

Comby† cites a case of "feminism" of temporary duration. The patient was presented before the Société Médicale des Hôpiteaux de Paris in August, 1877, by Lereboullet.

> A soldier, aged 22, of good physique and normal sexual powers, was seized with parotitis (apparently unilateral), without fever and without much pain. Four days after the height of the parotid swelling, both testicles were attacked. In three or four days they were swollen to three times their original volume, with only moderate pain. The epididymis was not affected. After twenty days both testicles atrophied completely, and the mammary glands enlarged. At the time of presentation of the case (three months after the parotitis) complete atrophy of both testicles and enlargement of the mammary glands were demonstrated, as was the absence of a beard and of hair on the chest. "The penis is well developed, and the pubic hair is normal; but all sexual appetite has disappeared; the erections, formerly frequent and followed by ejaculations, are no longer possible to produce."

Four years later Laveran examined the patient, but could not determine the persistence of "feminism." The mammary glands particularly were found to be normal. The testicles were atrophied and reduced to the size of beans. The patient, who confessed impotence and absolute frigidity, was invalided to Constantine on account of his testicular atrophy. No further account of the case is given.

A recent case was presented to the same society in July, 1917, by Laignel-Levastine and Courbon.[73]

> A soldier, aged 22, who previously to mumps was of fairly good physique, took an active part in athletic games, and had proved himself to be capable of sexual intercourse "many times a night and several times a week," was seized with a violent attack of mumps with a bilateral orchitis and meningitis. This was followed by a progressive atrophy of the penis and both testicles and hypertrophy of the mammary glands. The patient lost all interest in sports, and acquired a feminine manner. However, he was still capable of sexual excitement in the presence of his mistress, but could perform coitus only occasionally, and after each time was abnormally weakened. The case was presented seven months after the acute period of the parotitis and orchitis, and no further mention of the case can be found.

I have given these two cases in detail, because they are the only two cases of so-called feminism as the result of mumps which I have been able to gather from the literature. From a physiological standpoint it is difficult to understand why destructon of both testicles at the age of twenty-two should bring on feminine characteristics. Castration at this age does not have this effect.* Were such complete atrophy of both testicles to occur before puberty one would expect the development of characteristics of a eunuch, but mumps is so rare before the age of puberty that no eunuchs as the result of mumps have ever been described. Furthermore, even if a small portion of healthy testicular tissue remained, it would allow the secondary male characteristics to develop.* The "feminism" in the first case was temporary; it may yet prove to be so in the second case, since the man was not rendered completely impotent, as was the first one. Certainly if impotence did develop in the second case, sexual excess might be considered as a possible factor.

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† Comby[1], *op. cit.*, pp. 113, 114.

The fact that these feminine characteristics may be of temporary duration is interesting and leads to a discussion of a possible compensatory hyperplasia of the normal testicular tissue in the presence of partial atrophy.† Both Jouloux and Laurens observed a compensatory enlargement of the intact testicle after unilateral atrophy from mumps.‡ Others have noted that a partially atrophied testicle may in the course of time increase in volume.§

In the reports on specimens of atrophied testicles there is nothing said regarding the histological findings suggestive of the presence of such a hyperplasia, although no remarks are made that this was looked for.* Many observers remark that when the sexual function has diminished with the development of testicular atrophy, this function may gradually increase again, and even return to its former state. The testimony in favor of a compensatory hyperplasia, as suggested by Schottmüller, is based upon individual observations not checked by measurements, and upon statements of patients regarding their relative sexual powers at different times, which, since many of the cases were unmarried soldiers, would vary according to circumstances of a complex nature, both physical and psychological, and quite apart from the results of the disease. The lack of evidence from microscopical examinations throws doubt upon the theory that there is an actual compensation from the histological point of view. From a functional standpoint there may be a compensation without evidence of hypertrophy or hyperplasia. Suffice it to say that diminished sexual power developing with testicular atrophy after mumps, does not signify in the great majority of cases a progressive loss of the sexual function to the stage of complete impotence. That this may take place is undeniable in view of Stolz's report of a complete unilateral atrophy as shown by the pathological findings, the case of complete loss of sexual powers after bilateral atrophy cited by Comby, and the case of sterility recorded by Giovanni. However, the rarity of this complete destruction of all the testicular tissue warrants a favorable prognosis. In fact, it is the physician's duty to assure the patient in a most positive manner that he will regain his sexual powers, in order that fear of impotence may not act as an inhibition on an already embarrassed sexual apparatus.

(To be continued.)

* * *

Cholera in Korea.—A statement received from Tokio on September 22 announced that fifteen hundred new cases of cholera have been discovered in Korea. This makes the total number of cases more than twenty thousand, of whom more than nine thousand have died.

"It is perhaps well to point out that castration never induces a condition in any respect resembling the female type: the condition is infantile and not female." (Vincent, S.: Internal Secretion and the Ductless Glands, New York, 1912, p. 69).

In a castrated animal the accessory sexual glands atrophy and, if the operation is performed before puberty, they do not develop (Tigerestedt, R.: Text-book of Physiology. Trans. Martin, New York, 1906, p. 692).

"In those abnormal cases in which testicular growth is arrested, the prostate remains in a condition of rudimentary development . . . It has been found also that the prostatic tubules disappear almost entirely in castrated animals, and what is left of the epithelium completely loses its secretory function." (Marshall, F. H.: Physiology of Reproduction, London, 1910, p. 239.) It is a disputed question whether Cowper's glands atrophy after castration. (*Ibid.*, p. 240.)

Castration does not by any means ensure a checking or complete loss of the sexual desire, nor does it stop the possibility of coitus (erection and ejaculation the latter emanating from the prostate and Cowper's glands, if these do not atrophy). (Nagel, W.: Handbuch der Physiologie des Menschen, Braunschweig, 1907, p. 41; Luciani, L.: Human Physiologie. Trans by Welby, London, 1917, Vol. iv, p. 78.)

When a portion of a testicle is allowed to remain after castration, the chicken does not develop into a capon. (Nagel, W.: *op. cit.*, p. 42.)

"A congenital one-sided atrophy," *i. e.*, a well-marked smallness of one testicle, is not infrequently observed in otherwise quite vigorous individuals, and not rarely in combination with a particularly strong compensatory development of the other healthy testicle." (Posner, C., in Health and Disease in Relation to Marriage and the Married State. Senator and Kaminer, New York, 1905, Vol. ii, p. 701.)

Jouloux[30], *op. cit.*, op. 482; Laurens[29], *loc. cit.*

Laveran,[2] *op. cit.*, p. 68.

Should a compensatory hyperplasia be found, it would be of considerable importance to know whether this took place in the reproductive cells lining the seminiferous tubules or in the interstitial tissue constituting what Steinach has termed the "pubertal gland."

In this connection it is interesting to note that "Lode found that in castrated bulls, horses, and guinea pigs the glandular epithelium of the seminal vesicles atrophied but the connective tissue underwent hyperplasia." (Marshall, *op. cit.*, p. 234.)

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MATERNITY AID.

The Journal asks its readers to consider most carefully the letter of Dr. Walter P. Bowers published in another column. He suggests a plan for legislation for maternity benefits which he has submitted to the special commission now considering this matter. The Journal has already expressed the opinion that some legislation will be enacted, and is confirmed in this belief by the fact that both political parties have endorsed in advance any program the commission may advocate. The public has a legitimate interest in this matter. It is a source of regret that the medical profession have not clearly defined opinions as to what should be done to better existing conditions.

Under these circumstances the truly conservative suggestions of Dr. Bowers are most welcome. His plan builds upon existing institutions, and proposes that these institutions be improved and enlarged. In the beginning it is proposed to start in a simple and economical manner and let experience show the lines of progress. Reduced to its simplest terms Dr. Bowers suggests that well conducted and adequate Lying-In Hospitals be aided by the State in suitable cases, provided pregnancy and infant welfare clinics are conducted in connection with the maternity clinics. Thus automatically the two factors are established which have done most to cut down maternal and infant mortality. It must follow that physicians will have better opportunities to concentrate their attention on these important matters and as time goes on improved hospital facilities will make obstetric practice more attractive and hence better conducted.

The Journal does not wish to forestall any recommendations of the special commission. They are studying most carefully conditions of obstetric practice and the reasons for the increasing maternal mortality. This report and their recommendations are looked for with great interest and with full expectation that they will present a plan which must commend itself to the medical profession as a whole. Less than four weeks remain before the legislature considers this matter.

The medical profession through the appointment of the President of the Massachusetts Medical Society as chairman of the commission, has been asked to point out what should be done. If we give no answer we must not complain of whatever plan is adopted. And furthermore, we must not expect to be consulted with much eagerness in the future on questions of medical importance. The matter demands the best thought of us all. The time is short but the opportunity is still open; the duty is pressing.

* * *

Worcester North District Medical Society.—The following extension course of lectures has been arranged by the Worcester North District Medical Society in coöperation with the Harvard Medical School:

Oct. 26. Dr. Lincoln Davis, "Acute Surgical Conditions of the Abdomen."

Nov. 2. Dr. Franklin W. White, "The Modern Examination of the Stomach." Illustrated with projection lantern slides.

Nov. 9. Dr. Frederick C. Irving. (*a*) "Pre-eclamptic Toxemia," (*b*) "Antepartum Hemorrhage," (*c*) "Difficult Labor."

POLIOMYELITIS IN VERMONT.

In view of the present incidence of poliomyelitis in Boston and Massachusetts, it is of interest to compare the experience of another New England state in regard to this disease. The subject is reviewed in a recent bulletin of the Vermont State Board of Health in an article, "Poliomyelitis in Vermont, 1918 and 1919," by Charles F. Dalton, M.D., and W. L. Aycock, M.D.

Poliomyelitis was first made reportable in Vermont in 1910, and the records of annual epidemics since that time show that communities in which there appeared a considerable number of cases in one year became comparatively immune for the next two or three years. Years in which there has been a high incidence have been succeeded either directly or gradually by minimum records. After the severe epidemic of 1914, for example, when 304 cases occurred, the incidence dropped in 1915 to 44 cases, subsequently increasing slightly to 64 cases in 1916 and then to a higher incidence of 171 cases in 1917. In 1918, however, only seven cases were discovered, followed in 1919 by 15 cases, with the prospect, if former precedents can be relied upon, of an increase in 1920. The report states that the seven cases of poliomyelitis listed in 1917 were well scattered, and, except for two cases in the same family, had no apparent connection one with another.

It was not possible to establish any infectious source. Only three of the cases were reported in the acute stage, the others being unattended or unrecognized and later discovered by means of resulting paralysis. No deaths occurred in 1918 from this disease.

In 1919, 15 cases of poliomyelitis were recognized in Vermont; seven of these, some of which were associated to some extent, occurred within a small area in the southern part of the state. Ten of the cases were males and five females, or 66.6 per cent. of the cases were males and 33.3 were females. The average percentage of males to females who have contracted the disease in Vermont during the last ten years has been 57.9 per cent. to 42.1 per cent. There has been a preponderance of males over females each year with the exception of 1918, when there were five females and two males affected, or 71.5 per cent. to 28.5 per cent. In 1919 the preponderance of males was the same as the preponderance of females over males in 1918. These figures represent the greatest variations which have occurred in Vermont at any time during the last ten years.

The greatest incidence in 1919 occurred among persons of four years and under and from ten to nineteen years of age. The average percentage of cases in different age groups for the last ten years has been 43.2 per cent. for those of four and under; 27.2 per cent. among those from ten to nineteen; 20.3 per cent. for ages between twenty and twenty-nine; and 5.1 per cent. among adults over twenty-nine years. Although the date of paralysis has not been ascertained in all of the 1919 cases, it is known that in each case it occurred before the fifth day of the disease. The usual complex combinations in muscle groups affected were observed. There was only one case of respiratory paralysis, and a considerable predominance of paralysis of the leg muscles. There were no deaths from poliomyelitis during 1919. The greatest incidence occurred in August and September. It is interesting to note that the 1919 cases were grouped to a great extent in a section of the state in which there has never been an outbreak of poliomyelitis, and that this section was contiguous to an area which had a number of cases of poliomyelitis in 1917.

◆

DANGER TO AMERICA FROM EUROPEAN EPIDEMICS.

That America is in considerable danger at the present time from contagious diseases which might be brought here through the emigration of peasants and other refugees who have been exposed to maladies epidemic in Europe has been pointed out by Surgeon-General Cummings of the United States Public Health Service. There are seven million people trying to gain access to this country from those sections in Europe where typhus and yellow fever are epidemic. A large majority of these people are trying to come from Asia Minor and the Black Sea district of Russia through the ports of Danzig, Bremen, and Rotterdam; efforts are being made, therefore, by public health officials to reconcentrate them in Greek and Italian ports for transportation to the United States. In many Mediterranean ports bubonic plague, as well as typhus, is prevalent and as twenty cases have been reported recently in Paris, it is apparent that the disease must have reached the city through Havre or other ports. Although we are prepared to expect such conditions in uncivilized and unsanitary countries, they are not to be tolerated in northern countries where public health supervision is available.

In order to protect the United States from being subjected to the danger of disease from foreign sources, the United States Public Health Service is taking whatever precautionary measures are possible. Medical officers have been stationed at Danzig and at Dutch and Belgian ports, as well as at the more important Greek ports, in order to inspect all vessels and enforce precautionary measures among the emigrants. Vessels from other infected ports are prevented from entering United States waters. Both plague and yellow fever are epidemic in Mexico also, as well as in Guatemala and Salvador.

The Public Health Service is represented at all quarantine stations in the United States, and public health agents board all incoming vessels in order to fumigate them and destroy rats. In its effort to safeguard the health of the people, the Public Health Service is maintaining a vigilant watch on all immigrants arriving in this country. It is of utmost importance that the people and the government realize the danger of America becoming a foothold for European plagues, and coöperate with the Public Health Service by reporting any suspicious cases so that prompt and efficient assistance can be rendered and every possible precaution taken.

THE OSLER INSTITUTE OF GENERAL PATHOLOGY AND PREVENTIVE MEDICINE.

As an expression of the world's indebtedness to Sir William Osler as a physician, a teacher, and an investigator, it has been proposed by a number of representative members of the University of Oxford and of the medical profession that there be established an Osler Institute of General Pathology and Preventive Medicine. Such an institution would be an appropriate memorial to Osler's life work; for although during the early part of his career his chief interest was in pathology, he later became an enthusiastic believer in the future of preventive medicine. A general committee and an executive committee have been formed to direct the raising of funds; upon the response to the appeal issued by the committees will depend to a considerable extent the ultimate nature of the memorial. A memorial of this sort, of practical and daily value to the advance of medical science, would have been appreciated by Osler, whose whole life was devoted to the progress of medicine, both by his contributions to it and by his efforts to promote, distribute, and organize it. Few physicians have attained the international esteem in which Sir William Osler is held in Canada, England, in the United States, and in other countries. It is fitting, therefore, that the institute erected in his memory should be of international interest and benefit, reflecting in its purpose and ideals, as would the proposed Osler Institute of General Pathology and Preventive Medicine, Osler's nobility of character, his breadth of sympathy, and his greatness of achievement.

MEDICAL NOTES.

American Electro-Therapeutic Association.—At the 30th annual meeting of the American Electro-Therapeutic Association, held at Atlantic City September 14-17, the following officers were elected to serve for the ensuing year: President, Dr. Byron Sprague Price, New York City; vice-presidents, Drs. V. C. Kinney, Wellsville, N. Y.; C. M. Sampson, St. Joseph, Mo.; Charles Collins, Washington, D. C.; D. A. Cater, East Orange, N. J.; W. T. Johnson, Philadelphia; trustees, Drs. F. B. Granger, F. H. Morse, both of Boston; W. M. Clark, Philadelphia; E. C. Titus, New York; William Martin, Atlantic City; Frederic deKraft, New York City; treasurer, Dr. J. W. Travell, New York City; secretary and registrar, Dr. A. Bern Hirsh, New York City.

Institute for the Control of Venereal Disease.—It has been announced that an Institute for the Control of Venereal Disease, under the auspices of the United States Public Health Service, will be held in Washington, D. C., beginning November 22 and continuing for two weeks. The faculty will be composed of approximately twenty-five lecturers and instructors, including Dr. John H. Stokes, Rochester, Minnesota; Dr. Hugh Young, Baltimore, Maryland; Dr. John A. Fordyce, New York City, and Dr. Edward L. Keyes, Jr., New York City.

YALE MEDICAL SCHOOL APPOINTMENTS.—Dr. Lane and Dr. Alfred G. Madler have been appointed clinical professors of dermatology in the Yale Medical School, to succeed Dr. Ralph A. McDonnell, who has resigned.

APPOINTMENT OF DR. CHARLES MACFIE CAMPBELL.—Dr. Charles MacFie Campbell has resigned as assistant director of the Henry Phipps Psychiatric Clinic, Johns Hopkins Hospital, to become professor of psychiatry at the Harvard Medical School and director of the Boston Psychopathic Hospital. Dr. Campbell began his new work on October 1.

GRANT TO THE PENNSYLVANIA STATE COLLEGE.—The sum of five thousand dollars has been granted to the Pennsylvania State College by the Rockefeller Institute for Medical Research to be used in promoting the research in animal nutrition which has been conducted for the past twenty years by the Institute of Animal Nutrition under the direction of Dr. H. P. Armsby.

MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH.—Dr. Leonard G. Rowntree, professor of medicine in the medical school of the University of Minnesota, and Dr. Reginald Fitz, associate in medicine of the Massachusetts General Hospital, have become members of the staff of the Mayo Foundation for Medical Education and Research, Rochester, Minnesota, for the purpose of developing further research in internal medicine.

NUTRITION INSTITUTES. — Representatives of twenty-five associations for child welfare in Rochester, New York, will be given an intensive course the first week in November, in preparation for work in nutrition clinics and classes. Neighboring communities will also send workers for training. A large number of children are now being weighed and measured in order to form classes of those who are seven per cent. underweight for their height. The undertaking is directly under the control of the Board of Education and is similar to that now in operation in Chicago, where twenty-three schools are already organized, and in Cleveland, which has established five school district centers. Dr. W. R. P. Emerson of Boston will have charge of the course, with the coöperation of various community representatives, including Prof. John R. Murlin of the University of Rochester.

In Newport, Rhode Island, Dr. Charles Easton, formerly of the Massachusetts General Hospital, and Dr. Keenan of the local health department, have charge of nutrition clinics which are showing excellent gains in weight.

Congress has recently appropriated $15,000 for nutrition work in Washington, where 20,000 children are to be examined under the direction of Dr. Benton, head of child welfare work for the District of Columbia. These physicians recently visited the Boston nutrition classes in which the nutrition workers selected to take charge of them were trained.

The western representatives of Nutrition Clinics for Delicate Children—the Elizabeth McCormick Memorial Fund—have arranged for Dr. Emerson to make monthly visits to Chicago, in order to give personal direction to the clinics and classes of that city.

VENEREAL DISEASE STATISTICS.—A statistical table of venereal diseases reported to the State Boards of Health by physicians, clinicians, hospital superintendents and other sources show that during the month of June, 1920, 25,450 cases were reported, and that there were 12,149 new admissions to the clinics operating under the joint control of the United States Public Health Service and the State Boards of Health. There were administered during the month 30,730 doses of arsphenamine.

ANTIMALARIAL MEASURES ON THE ISLAND OF CYPRUS.—The antimalarial measures which were begun in 1913 on the Island of Cyprus were continued successfully during 1919 and resulted in a further reduction in the disease for that year. The annual medical report states that malaria incidence has decreased steadily from 10,035 cases treated in 1912, to 1,962 in 1919, and the spleen index has declined from 17.2 per cent. in 1913 to 5.2 in 1919. The estimated population of the Island of Cyprus in the year 1919 was 311,108, as compared with 306,997 in 1918. In carrying out the antimalarial work, marshes and a fresh-water lake have been drained during the year, and aqueducts and drains have been constructed and repaired.

CHAULMOOGRA OIL IN THE TREATMENT OF LEPROSY.—An important and interesting article on the treatment of leprosy, with especial reference to some new chaulmoogra oid derivatives, by Dr. J. T. McDonald, has been published in a recent Public Health Report. In view of recently reported results in cases treated with chaulmoogra oil, the following conclusions to this study are of especial interest:

1. The intramuscular injection of the ethyl esters of the fatty acids of chaulmoogra oil usually leads to a rapid improvement in the clinical symptoms of leprosy. In many cases the lesions disappear, except for scars and permanent injuries, and the leprosy bacillus can no longer be demonstrated.

2. When combined with iodine, the fatty acids of chaulmoogra oil and their esters give good results; but there is no adequate experimental proof that this addition of iodine causes any increase in the effectiveness of the materials used.

3. All of the available evidence obtained from the use of fractions of the fatty acids of chaulmoogra oil indicates that the therapeutic action is due to one or more of the fatty acids of the oil or to some as yet unidentified substance associated therewith. The various methods of fractionation heretofore employed have failed to demonstrate the active agent.

4. Although conclusive evidence is not at hand, it is probable that the oral administration of chaulmoogra oil derivatives is of minor importance compared with the injections.

5. In treating leprosy, it is important to make use of all auxiliary agencies to build up and maintain bodily vigor.

6. Hypodermic injections of the ethyl esters into leprous nodules are followed by marked swelling with ultimate recession of the lesions. This is a valuable auxiliary treatment for especially resistant lesions.

There has been received sufficient evidence to indicate that chaulmoogra oil contains one or more agents which exert a marked therapeutic action in many cases of leprosy, and although it has not yet been determined with finality whether or not the apparent cures are real and permanent, it is at least certain that we have in chaulmoogra oil a valuable agent at our disposal in the control of the disease.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending October 9, 1920 the number of deaths reported was 172 against 171 last year, with a rate of 11.99[*] against 11.20 last year. There were 36 deaths under one year of age against 33 last year.

The number of cases of principal reportable diseases were: Diphtheria, 32; scarlet fever, 19; measles, 10; whooping cough, 8; typhoid fever, 2; tuberculosis, 67.

Included in the above were the following cases of non-residents: Diphtheria, 13; scarlet fever, 2; tuberculosis, 14.

Total deaths from these diseases were: Tuberculosis, 11.

Included in the above were the following cases of non-residents: Tuberculosis, 1.

Infantile paralysis cases, 11; deaths, 1.

Organization of a State Surgical Association.—A meeting was held in Worcester on September 22, for the organization of a State Surgical Association. The purpose of this organization is to bring into one democratic organization the surgeons of Massachusetts, so that by frequent meetings, clinics and full and frank interchange of views they may secure such intelligent unity and harmony in every phase of their labor as will elevate and make effective the opinions of the profession in all scientific, legislative, public health, material and social affairs, to the end that the profession may receive that respect and support within its own ranks and from the community to which its honorable history and great achievements entitle it. The movement has the endorsement of the American Medical Society.

The Boston City Hospital, Massachusetts General Hospital, Women's Free Hospital and Peter Bent Brigham Hospital have agreed to give a special surgical clinic of two days' duration November 10 and 11 for the benefit of the Association.

Appointment of Dr. John Mason Little.—Dr. John Mason Little of Boston has been appointed assistant chief surgeon of the Boston and Albany Railroad. This is a new medical office, recently established by the officials of the railroad. Dr. Little was graduated from the

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[*] Based on the 1920 Federal Census.

Harvard Medical School in 1901. After serving in the Massachusetts General Hospital and studying for a year in Vienna, he served as an assistant to Dr. Samuel Mixter for four years. He then went to Labrador to devote a few months to medical and surgical work in Dr. Grenfell's Hospital at St. Anthony, but his work there extended over a period of more than ten years. About three years ago he returned to Boston to practise, and has served on the general staff of the Massachusetts General Hospital.

Examination of Children for Industries.—A warning has been issued to parents by the State Department of Labor and Industries calling attention to the provisions of the school attendance law, which requires that every child between the ages of 14 and 16 years must be kept in school unless a working certificate has been issued for the child. In order to obtain a certificate, the child must present to the superintendent of the school a certificate signed by a physician appointed by the school committee, stating that the child has been given a thoroughly physical examination by the physician and is in sufficiently good health and physically able to perform the work which he intends to do. An investigation of this matter has led to the discovery that in a great many cases certificates have been signed without any examination having been made or that the examination has been so superficial as to be valueless. The following statements referring to the duties of physicians in this regard have been issued:

"The issuing of health certificates to children entering industry should, in every community, be under the supervision of one physician designated for the purpose by the local school committee or the board of health. The reason for this is that it is only by placing the responsibility with a definite authority that uniform standards can be secured and maintained.

"It is the examining physician's duty to decide from the examination he makes whether the child is in sufficiently sound health to perform the work elected by him. The purpose of this requirement for health certificates is to safeguard the child entering industry, to shut out from industry children with such serious defects as to make their employment in occupation dangerous, and to protect children with minor defects from entering occupations or processes for which they are physically unsuited. A child with tubercular tendencies, for example, should not be certified for work in a cotton mill, nor one with a weak heart for work which would require lifting heavy weights, or running up and down stairs. A child with defective vision should not be permitted to engage in work involving eye strain.

"The object of the law is defeated unless the examination of the child is definitely related to the work he desires to enter. Examining physicians should acquaint themselves with the general nature of the occupations which children in their district enter."

Bequests to Medical Institutions.—By the provisions of the will of the late Henry H. Sprague of Boston, the sum of two thousand dollars has been bequeathed to the Boston City Hospital, of which Mr. Sprague was a trustee for thirty years, for the purchase of books or other articles for the comfort of the patients in the South Department. One thousand dollars has been left to the Boston Lying-In Hospital.

Anterior Poliomyelitis in Boston.—On the recommendation of the advisory council of the Health Department of Boston, an appropriation of ten thousand dollars has been made by the City Council to be used in combating the spread of infantile paralysis in this city. The disease has been more than usually prevalent in Boston and the surrounding communities during August; statistics show that there were five cases during the week ending August 7, against none the corresponding week of the three preceding years; thirteen in the week ending August 14, against two last year, and none in the two preceding years; and seven in the week ending August 21, compared with none last year, and one in each of the two preceding years. During the epidemic of 1916, the cases for the three weeks referred to were respectively nine, four, and eight. A plan has been outlined by Dr. Woodward, City Health Commissioner, whereby there shall be appointed three diagnostic experts, who shall be on call at all times to aid physicians; an epidemiologist, and clerical assistants. It is thought that the present outbreak of the disease may be expected to last for about three months.

The following announcement has been sent to physicians by the Health Department:

During the month of August 56 cases of anterior poliomyelitis, of which 15 were non-residents admitted to Boston hospitals, were reported to the Boston Health Department. While the number of cases does not at present appear to be increasing, the disease has been reported from all parts of the city and the possibility of anterior poliomyelitis should be kept in mind in all cases of illness presenting symptoms suggestive of the beginning of this disease.

Anterior poliomyelitis is a disease which by law is reportable to the local Health Department. Please report your cases promptly on the postal cards provided by this department.

No definite measures are known whereby the spread of anterior poliomyelitis can be prevented, but experience seems to justify the requirement of the Health Department that patients or persons presenting suspicious symptoms be isolated in the same manner as a case of scarlet fever and that all secretions or discharges from the patient, and his eating and drinking utensils, be carefully sterilized.

In view of the great importance of an early and correct diagnosis in this disease the Boston Health Department is now prepared to furnish local physicians with expert diagnostic assistance in any doubtful or suspicious case. Should you desire such assistance telephone Fort Hill 5100, Health Department, Medical Division, between the hours of 9 A.M. and 5 P.M. daily and Saturday until 12 M. At all other times call Main 3887.

The Boston Medical Library.—The forty-fourth annual report of the Boston Medical Library, for the year 1919, shows that the library has increased in size, importance, and general usefulness. During the year the Library was fortunate enough to obtain nearly complete sets of most of the foreign periodicals which were held back by the war. In view of the decreased number of medical books published, the policy was adopted of purchasing at auction and from second-hand catalogues some of the older books and journals which, under other circumstances, would not have been purchased until the supply of ordinary and more recent books had been secured. The Library Building is overflowing with books from basement to attic and is in great need of a new stack building. The feasibility of building wooden stacks in the rear upper hall of the building was considered, but it was finally decided to utilize instead a room and a closet in the basement, thus providing space for about 6,000 volumes. A collection of 8,000 volumes, for the most part the property of the Essex South District Medical Society, were received by the Library from the Essex Institute of Salem. A total number of 671 current periodicals were received during the year. Most of the German journals are now being received, although there are undoubtedly some whose publication has been suspended. A decrease in the number of French journals received is due in large part to the discontinuance of journals from Belgium and north-eastern France. The total number of volumes in the possession of the Library has been increased from 33,000 in 1901 to over 100,000 at the present time, exclusive of the 10,011 volumes in the duplicate library. There were bound during the year over two thousand periodicals, books, and monographs. The total attendance during 1919 was 7,261, or an average of over twenty-four persons a day. There were elected thirteen Fellows and thirty-eight Associates; the total membership is now eight hundred and fifteen, including Life Members, Fellows, and Associates. The report contains a list of the donations made to the Boston Medical Library in 1919.

NEW ENGLAND NOTES.

Bequest of $20,000 to the Maine General Hospital.—The will of the late Mary J. E. Clapp of Portland, Maine, included a bequest of twenty thousand dollars to the Maine General Hospital.

Correspondence.

MATERNITY BENEFITS.

Boston, Mass., Oct. 7, 1920.

Mr. Editor:—

In recent years various legislative activities have dealt with matters of grave importance to the medical profession. The history of the Workmen's Compensation Act is fresh in our minds. The apathy of the profession led to the possibilities for harm. This movement, which was not the expression of ripened judgment in its early stages, gained momentum, and, like any flood, was difficult to manage after it had gotten well under way. A little effort early would have prevented great waste of effort and the expenditure of some money.

Another important matter is up for consideration, which relates to maternity benefits and infant welfare. Bills were presented last year, one of which provided for financial benefits for pregnant women. Under this bill there was the possibility of the expenditure of millions of dollars and the relation to and responsibilities of physicians under this scheme seemed objectionable.

It is undoubtedly true that the state has a responsibility. Recent editorials in the Boston Medical and Surgical Journal have brought to public attention the abnormal mortality of childbirth.

One candidate for the Presidency of the United States has emphasized the dangers of maternity. He states that among 16 important countries, 13 show a lower death rate for mothers than the United States, and six a lower death rate for very young children.

The President of The Massachusetts Medical Society, who is Chairman of the Commission to study the question of care of pregnant women and infant welfare, reports that the statistics of Massachusetts show that the mortality of parturient women and of infants does not compare favorably with many other states, and that further, physicians have shown a lack of interest in the subject and of coöperation with the Commission, which is a reflection on the loyalty or intelligence of the profession, or both.

There is no available knowledge of the morbidity of child-bearing women except so far as the mortality may be an index. If surgeons would testify to the operations made necessary by the parturition itself, or inadequate medical service, and if practitioners were obliged to report sepsis or other diseases incident to pregnancy, childbirth and morbid conditions in the newborn child, these questions could be rationally dealt with. If preventive medicine can be employed to reduce the mortality and morbidity of pregnancy, it is just as logical for the state to interest itself in these matters as it is in cases of scarlet fever. One may reasonably argue that the life and health of a child-bearing woman is of inestimable value to the state. Senator Harding says that the Government is spending twice as much for suppression of hog cholera as for the welfare of the child. If we were cannibals, perhaps the latter matter would have received more attention.

I have had the honor of presenting to Dr. Worcester's Commission tentative suggestions for the skeleton of a Bill, and reproduce them here:

Suggestions for a Bill Relating to Pregnancy and Infant Clinics.

Health measure rather than charity.

Division of the Department of Public Health under the name of Maternity and Infant Welfare, or some other suitable designation.

Either as an entity or sub-division under Hygiene.

There should be appointed in charge of or under the Division of Hygiene, one or more experts in obstetrics.

This division should organize a staff of inspectors who shall investigate the obstetric service in hospitals and in private practice throughout the state. Where it may be found that the work done in any given institution is commendable, both in quality and readiness to meet local conditions, such institution should be classified as approved. Approved hospitals should be required to establish adequate obstetric facilities for all possible cases and also service for pregnant women and infant care, *i. e.*, pregnancy and infant clinics where cases may be studied and prescribed for at rates to be approved by the Director of the Division. Whenever it may be found that a given case cannot pay the approved charges, upon report to the Director, and upon his approval, the state shall pay to the institution the whole or part of the cost, as may be found necessary.

Agreement by the hospital to develop such service as may be outlined by the Director, shall be a prerequisite to license as a Lying-in Hospital.

Whenever it may be found that a community does not or will not provide suitable provisions for pregnancy and infant clinics, the Division shall organize a dispensary or even provide an obstetric hospital. For example the North End, Boston.

In scattered communities, groups of towns could be made into a district and officials appointed by the Director should go at stated intervals to carry out the purposes outlined.

Experts should be employed who shall act as advisors to local hospitals and to physicians. Whenever it may be found that pregnant women are not normal, the cases should be placed under proper supervision and environment.

The Department of Public Health should be given authority to establish rules requiring physicians to report all essential facts relating to mortality and morbidity of pregnant women and infants. Every effort should be made to develop local interest in local organizations, similar to the activities of anti-tuberculosis societies, working in coöperation with health authorities.

The morbidity of pregnancy and infancy should be as fully and promptly reported as communicable diseases, or ophthalmia, so that the responsibility of the medical profession could be studied.

This plan would in time eliminate the midwife and the poorly qualified physician from obstetric work.

Midwives now add to the mortality and morbidity of childbirth. Many avoidable injuries to women may result from inefficient medical service.

In explanation permit me to reiterate and urge that this matter should not be dealt with as a charity except in an incidental way, neither should there be established a great top-heavy organization in the beginning. Rather a division under the Department of Public Health for careful study and gradual development as the ascertained facts warrant.

This project can only be logically developed under the guidance and coöperation of the medical profession. Every physician should feel some measure of responsibility and this matter should be discussed in medical societies.

Past history shows that doctors are themselves to blame for some faulty legislation relating to health measures. Sins of omission are sometimes as disastrous as blunders of commission. We have intelligent and constructive minds in the profession but if they are not put to work this proposed scheme and kindred efforts may be driven into unproductive channels or even become political playthings.

When Dr. Worcester reported, October 6, to the Council of the Massachusetts Medical Society the lack of coöperation in this vitally important matter now under his direction, I felt disturbed, and this communication is forwarded with the hope that some interest may be aroused and the profession led to take concerted action. Discussions are necessary to develop the wisest plan.

Walter P. Bowers.

SOCIETY NOTICE.

Suffolk District Medical Society.—The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, 8 The Fenway, Thursday, November 4, 1920, at four o'clock.

Candidates should make personal application to the Secretary and present their medical diploma at least one week before the examination.

Richard H. Miller, *Secretary*.

402 Marlborough Street, Boston.

The Boston Medical and Surgical Journal

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The Massachusetts Medical Society.

MEETING OF THE SECTION OF DISEASES OF CHILDREN, JUNE 9, 1920.

THE USE OF WATER IN THE DISEASES OF CHILDHOOD.

BY FRITZ B. TALBOT, M.D., BOSTON, MASS.

WATER is the most important element in human nutrition and disease and yet probably the most neglected. The lack of interest in the use of water in disease is probably due to the fact that "familiarity breeds contempt," and much of the knowledge about its use is apparently so obvious that we assume it is known by everyone. It is my experience, however, that these obvious facts, which seem to be common knowledge, are often neglected or forgotten. It is wise, therefore, to summarize first the use and fate of water in the normal human body before we consider its use in disease.

The human body is composed largely of water: 66 to 71% of the body of a new-born infant is water and 58 to 65% of the body of an adult. The relative proportion of water in the body, therefore, diminishes with age. The natural food of the infant, human milk, is composed principally of water, approximately 87%, and in this respect as well as in all others, fulfills the requirements of the infant. When the amount of water ingested is compared with the amount excreted in the urine, the water output of the body apparently exceeds the water intake. This is due to the fact that the water formed during metabolism (the end product of which is carbon dioxide and water), is not taken into consideration. Considerable amounts of water are formed in this manner and can be estimated only by complicated chemical methods. The source of liquid in the body, therefore, is the ingested water and the water which results from katabolism.

Young infants usually take from 140 to 150 grams of water per kilogram (about 1 $^{1}/_{3}$ ounces per pound), while adults take about 35 grams of water per kilogram of body weight[1] (½ ounce per pound). The amount required per unit of body weight, therefore, diminishes with increasing age. Experience has also shown that the artificially fed infant usually requires more water than breast fed infant. The figures given above should be considered as the minimum figures. My experience has shown that healthy infants require one-half to one-third more total liquid, and older children approximately one-fourth more liquid than the figures above would indicate.

The excretion of water is through the kidneys, intestines, lungs and skin. In healthy infants it has approximately the following distribution: Kidneys, 60%; skin and lungs, 33%; intestines, 6%; retained, 1%.

This may be modified considerably in disease. During health the amount of water lost through the lungs and skin depends in large part upon either the surrounding humidity and temperature, or the amount of muscular exercise or upon both. Excessive perspiration, which is not compensated by increased water drinking, may so diminish the amount of liquid in the body that the relative composition of the body fluids is changed. This may cause many untoward symptoms, such as are seen in heat strokes.

The purpose of water is to keep the body in a state of equilibrium in which the various elements necessary for life will be in solution, to carry the food from one part of the body to the other, and to carry out from the body the waste products of katabolism and other abnormal elements. That water is necessary to do this is shown by the fact that if urea is given by mouth, an increased secretion of urine results. This is also true of common salt.

In health the urine is a good index as to whether or not sufficient water is being ingested. Immediately after birth very little urine is secreted until the seventh day when approximately 210 c.c., or seven ounces, are passed in the 24 hours. This amount rapidly increases so that by the end of the first month the breast fed infant passes as much as eight or more ounces daily, and the bottle fed infant about 16 ounces in 24 hours. The artificially fed infant always passes more urine than does the naturally fed infant. At six months the amount of urine is twice as great as at the first month, while in the fourth year it is three times as great, and in the twelfth year six times as great as at the first month.[2] The specific gravity of the urine is a good indication as to whether or not a child is taking enough liquid in the diet. In children over six years of age the specific gravity should not be higher than 1.018 and under six correspondingly less.

Conditions due to too little water in the body arise at various times and are often puzzling to the physician. The earliest instance of this is found in the new-born infants and is described by Holt as "inanition fever." It is usually seen during the first five days of life and is characterized by a temperature of 101° to 106° F., for which no cause can be found. Daily weighings have shown that the infant continues to lose weight while the fever persists. This loss in weight of children with inanition fever is always greater than the loss of weight of normal new-born infants. Holt describes children with inanition fever as follows: "The symptoms presented by these infants were a hot, dry skin, marked restlessness, dry lips, and a disposition to suck vigorously anything within reach. With very high temperature there was considerable prostration and weakened pulse. In the less severe cases there were only crying and restlessness. The rapidity with which the symptoms disappeared when the children were wet-nursed or properly fed, was very striking" (Holt). "Inanition fever," or better "desiccation fever," is due to the fact that the new-born infant is not given sufficient water to replace that lost from the body before a sufficient supply of breast milk is available. The treatment consists in giving water freely to the infant until the body absorbs sufficient water and the temperature falls.

A second condition due to too little water in the food is seen in communities where artificially fed infants are given a *concentrated food* such as "Eiweissmilch" (protein milk), without the addition of water. This food may contain enough calories to supply all the needs of the infant, and yet he will not gain because he does not receive enough water either to supply the demands of the body or to carry away the waste products through the kidneys. The simple addition of one half to one pint of water to the daily dietary will result usually in a satisfactory and continuous gain in weight. It is, therefore, necessary to bear the water requirements of an infant in mind when a concentrated food is fed.

Summer Heat. Body heat is lost from the body by radiation and conduction, and at times by the evaporation of water from the skin. When the surrounding temperature of the air is cooler than that of the body the heat radiates rapidly from the body. When the temperature is nearly the same as that of the body, the surrounding air takes up less heat. The skin then perspires and the moisture formed evaporates, thus cooling off the surface of the body, the amount of evaporation depending upon the humidity of the surrounding air; the greater the humidity the less evaporation. For example, in adults there is six times as much water lost from the skin when the surrounding temperature is 98° than when it is

68° F., and we all know how difficult it is to keep cool on a "muggy" day when the humidity is high. Unless this loss of water is made up by extra intake of water during the hot weather, the body will become dried out. This is one of the principal predisposing factors for heat strokes. It also may be responsible for failure to gain in weight in the summer months. Symptoms will be precipitated when children exercise vigorously in hot weather and perspire very freely without drinking water. The importance of these fundamental principles are not fully appreciated in northern climates where the season of extreme heat is very short, but are appreciated in the South, where long experience has taught its lessons. Older children will, if they have an opportunity, drink the water necessary to compensate for the extra loss of water in hot weather, but infants cannot ask for water and consequently it should be offered to them whether they take it or not, three or four times a day. on hot days.

In cases of *summer diarrhea* it is surprising to measure the total amount of water lost in the feces when six or more liquid stools are passed in the day. They may contain as much as one quart of bulk, the greater part of which is liquid. If the diarrhea is complicated by vomiting, it is easy to see why the body becomes so rapidly dried out and the patient appears so critically ill. The most important factor in treating such a case is to introduce sufficient liquid into the body to bring the body fluids up to their normal dilution. Parents often say that the child refuses to take water, but I have never seen a case in which a child could not be induced to take the required amount of water in one way or another. I remember vividly one such case in which a trained nurse, on the third day of an infectious diarrhea, was able to get 91 ounces into a child by persistence and ingenuity. The clinical results were startling and the child changed in twenty-four hours from one whose recovery was doubtful to one whose recovery was certain. Although this is an extreme instance it is characteristic. In estimating how much liquid should be introduced into the body, the amount that is normally taken during health should be taken as a standard; to this should be added about 50% more to compensate for what will be lost in the stools.

Fever also causes an increased loss of liquid from the body. This loss, however, is more difficult to estimate because it is usually lost through the lungs. If with the fever there is also restlessness, the loss of water may be very great. If there is also diarrhea, the loss will be excessive, and it will be found that twice the normal fluid-intake will not be any too much to prevent the appearance of alarming symptoms.

In *pneumonia* the situation seems to be somewhat different because the distribution of water in the body apparently is abnormal. Although water may be retained in the body, it is bound to tissues which do not normally require it, and unless extra water is given, there will not be enough circulating liquid to maintain the normal equilibrium of the body. In argument for this is the fact that following the crisis, in a case of pneumonia, there is remarkable increase in the water elimination via the kidneys and skin. It is therefore very important that additional water be given in cases of pneumonia, both to make up for the fever and to supply the tissues with the amount of water that they need.

In *intestinal intoxication in infants, associated with acidosis,* there is impaired elimination of liquid from the kidney. This may be ascribed either to the loss of water in the stools in such great amounts that it is impossible for the infant to ingest sufficient fluid to replace that loss, or to the fact that the patient refuses to ingest fluid or vomits practically all that is taken. As a result the tissues become dehydrated. This may be cured by introducing enough water into the body.

Treatment.—The best treatment is, of course, prevention of dessication of the body. The methods of introducing water into the body depend upon the symptoms of the case under consideration. Even when there is no vomiting and during the early stages of febrile diseases, a record of the amount of liquid ingested should always be recorded and added up at the end of each twenty-four hours. In this way only is it possible to know exactly how much fluid the child is receiving. If this is taken into consideration early enough and the child is given the amount of liquid which would normally be ingested during health plus the estimated amount lost as a result of the disease, fewer untoward symptoms will appear. A study of the records of the liquid ingested is often highly interesting and the information thus obtained is very important. Sometimes it is necessary to force water when the child is not receiving enough. This should be done when necessary in all instances except when it is done at the expense of the child's strength or when it causes vomiting.

The second method of introducing water is by the rectum. Success with this method depends very much upon the means employed. Very little success can be expected during diarrhea when there is excessive peristalsis, but it should always be tried. In other conditions without diarrhea, water may be introduced once in four hours very slowly, taking half an hour to introduce three to eight ounces, according to the age of the child, or it may be administered by the Murphy drip, four to five drops per minute, for periods of three hours. This should be alternated with rest periods of three hours in order that the rectum will not become irritated and peristalsis started up.

Finally water may be introduced subcutaneously or intravenously. In most instances subcutaneous injection of water is sufficient, but occasionally when very rapid results are essential it is necessary to introduce it intravenously or intraperitoneally. The water should be absolutely sterile and should be isotonic with the blood, that is, a normal saline solution. From three to sixteen ounces may be introduced at one time into desiccated children. It is surprising to see how quickly they react to this form of medication. When there is any desiccation of the body, the results are practically always quick, and like those of a very strong stimulant.

REFERENCES.

1 Langstein and Meyer: Sauglingsernahrung und Sauglingstoffwechsel, Wiesbaden, 1914, p. 40.
2 Gundobin, Die Besonderheiten des Kindesalter, Berlin, 1912, pp. 363 and 383.

DISCUSSION.

Dr. William W. Howell, West Roxbury: It is always a pleasure to hear a subject which is as old as medicine discussed from a new and modern point of view. It is always a pleasure to hear that an old remedy is as good, as essential, as helpful, and from a scientific point of view even more indispensable than ever. I am heartily in sympathy with Dr. Talbot's subject and keenly alive to the importance of water in the treatment of disease. However, from a personal point of view I am hardly in sympathy with the way he presented it, because he has left me hardly anything to say.

It is surprising to me that American works on pediatrics treat water so lightly. They give the subject a few sentences or a page and leave the rest to your imagination, trusting to luck that some water may be given. I feel safe to say that many babies' coming into the Infants' Hospital with an infectious disease or for feeding, that do surprisingly well, do so by virtue of the fact that we omit all medication and force fluids. It is surprising how sick and toxic babies may be when they come in and within 24 hours look a great deal better. I make myself unpopular very frequently on my visit because I say to the house officer, "I think it would be a good deal better to stop all medication and force fluids." There was a case in point this morning, a case of pyelitis, that had been very sick for ten days with a high fever, appetite poor, taking very little fluid, not making any progress whatever; four days ago I told the house officer to omit the drug he was giving — potassium citrate — and force fluids. The baby's temperature was normal the next day. The baby is doing perfectly well, is taking all the food offered him, more fluid; his weight is coming up and his temperature has remained normal. That is a very common occurrence with us. That is, I believe that the condition which is described as inanition fever not only occurs in the first three or four days of life or the first week of life, but I think that we see a similar condition in older babies that have been overdrugged with things that are distasteful, and in consequence will not take fluids, and in babies that have been vomiting and are depleted and robbed of fluid. I believe that inside of 24 hours the temperature will drop and such babies begin to eat and look entirely different.

The importance of fluid, I think, cannot be overestimated. I disagree with Dr. Talbot in one or two points; and one is that a baby cannot take much fluid by rectum if there is a diarrhea. I remember a baby that had a bad case of acute indigestion with fermentation, all washed out with profuse diarrhea, that gained a pound and a half over night, and all that it was given was fluid by rectum, by seepage.

The importance of fluid was brought to my mind years ago when I was a house officer at the Children's Hospital. I don't know how much drugging they do there now, but we did a lot of it at that time, and we had all kinds of diuretics and all kinds of stimulants and everything else. We were having a violent discussion about the cases in the wards, and my senior, a very brilliant man who always heard what everybody else had to say and then had his say, said: "Well, with all due respect to you fellows, I can run that ward upstairs on a bottle of castor oil, a few morphine pills, a can of milk and a barrel of water." And I really believe he could.

One of the graduate students asked me the other day when and how I should give water to an infant, and I answered both questions with one word, "always."

Dr. Fritz B. Talbot: I am glad that Dr. Howell spoke of pyelitis, because I should have put that in. It is important to wash out these pus cells that accumulate in the pelvis of the kidney, because if you don't wash them out they block up and result in an increase in fever.

I feel that if this subject that I have presented will make all the men see that the nurses keep a record of the amount of water ingested during illness and will not merely look at the chart, that I have accomplished a great deal, because I know that if you will look at the record of water ingested, you will be perfectly astounded to find that a number of children who, you think, are getting enough, have been getting minimum amounts of water; that is the reason many of the children do not do well in some of these serious illnesses.

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Cause and Prevention of Overstimulation of the Modern American Child.

By Erik St. J. Johnson, M.D., New Bedford.

"Protect, watch over, discipline and guide, those who have not yet attained sufficient age and experience to distinguish what is expedient for their own greatest individual interests."

This maxim, which perhaps expresses the greatest desire of the vast majority of healthy parents in normal homes, instinctive in most of Nature's kingdoms, coincides in the "Human Kingdom," with the "survival of the fit," and as such has been and is being, aided in every possible way by the universal spread of scientific knowledge, and system, permitted and backed up by the law and order of civilization. Under such a regime, the civilized, law-abiding nations of the earth, despite a clear understanding that its inhabitable surface is limited, look for a constant yearly increase of population, and hence a gain in strength and prestige, through the rearing of healthy normal children. Every now and then, whether it is Nature's action and reaction, or the operating of the eternal laws described by Malthus, human beings of one country or another (history repeats itself, the authorities say), kick over the traces, and in their apparent thirst for gain or power, fancied grievances, or something entirely new, cause conditions of strife, discontent and economic unrest, which in every way interferes with and seriously checks the establishment and progress of normal families and home life.

Against such eras of destruction and upheaval, operate the forces of parental devotion, special medical knowledge, social service, federal, stâte and municipal aid, combined with charities, organized and individual. These forces are presumably trying hard to supplement each other and work together, far greater results as regards welfare of home and children being attained and made possible by such coöperation.

So effective have been these efforts for unity in England, that infant mortality was actually reduced during the years 1916, 1917, and 1918, the more strenuous years of the war, in that country, to a lower figure than during the immediately previous years of peace. It would appear to be a lack of realization of what is most expedient, or distortion of proportional values, which further interferes with and temporarily blocks the unity of forces aforesaid, and decreases their efficiency.

In our own country and state, the forces for promotion of children's welfare have accomplished magnificent and wonderful work. You are all more or less familiar with the widespread diffusion of special knowledge of children through channels clinical, religious, municipal, and social. The more of this kind of work there is done, the more there seems to appear to do, and the large sums of money necessary have flowed in most generously, through avenues of public and private appeal.

Now it would certainly seem that at present, in this country, there is opportunity to give every child a chance for well-balanced health, education, and satisfactory progress in its contest for the right to existence. But though the medical men are checking and preventing organic disease, though our associations, public and private, are constantly weeding out the unfit, and though schools for mind and body are better than they ever were, there arises a gigantic monster which, like the Pestilence, or any of Nature's former checks on population, seems tending to disrupt these wondrous efforts, and seriously block their progress in the maintenance of normal homes necessary for the welfare of normal children.

In the *Boston Herald* of March 28, 1920, editorial section, page one, there is an article giving official figures and reports of the central police station. In commenting on the disappearance of 38,000 girls in the United States in one year's time, since March 1, 1919, of which number 323 are recorded in the city of Boston, the writer attempts to classify and get at the original fundamental causes. As one would naturally suspect, unsatisfactory homes and discontent therefrom are most prominent; but in trying to go a little further, and reasoning on the restless discontent in a country that is sufficiently prosperous to promote general happiness, three prominent headings strike one's eye:

1. Modern youth and childhood overstimulated. The modern girl and modern boy as well is over-stimulated from the outside.
2. Large proportion of blame placed on the "Movies" or motion pictures.
3. Need of a school for "Parenthood," modelled on one that exists in Belgium.

These statements are from reliable sources, and in a Boston paper, but many protests of a like nature are to be found in publications representing many of our principal cities and localities. Now, whether this condition of unrest and discontent was caused chiefly by the war, or increased prosperity and ambition, or by overstimulation from life in general, matters little. I believe it is generally agreed upon that the latter condition (overstimulation) is rampant among our children today, and being exceedingly difficult for most people to cope with, it is perhaps nullifying to a large extent the splendid work done during past and present time by promoters of children's health.

The evils of overstimulation of the human organism, from a physical point of view, even when the causes are entirely psychic, are too well known by the authorities on physiology and psychoneurology (being largely circulatory and nutritional) to take up your time with. Suffice it to say, that a distinctly temporary or acute disturbance in the normal balance of secretions of the thyroid, pituitary body, suprarenals and gonads, causing mild interference with the sensitive physiological functions of children, may actually today partake of the nature of a habit, on account of the continual presence of the exciting causes.

Now, everyone who has a real knowledge of children, and many who have not, have discoursed on the evils of the candy habit. That is a tangible concrete affair, while laboratories have made perfectly patent the ill effects of an overproportion of sugar in concentrated form as a continuous part of the diet of childhood and youth. Now it ought to be an easy matter to convince a parent who knows that excess of candy is deleterious to child health, excess of stimulation is quite as antagonistic, if not more so, because the children have more ways of receiving the latter through apparently normal channels than the former, rendering the habit easier to form and harder to break off than the "candy" habit. It is therefore my desire to interest our professional brethren, from the point of view of the specialist in both "pediatrics" and "neurology," in the fact that though the condition of overstimulation is apt to be complex, the causes are fairly clear and certainly easier for the average parent to comprehend than the reasons for chemistry of childhood metabolism or the micro-organisms which must be contested in preventing and overcoming organic infections. Consequently, why should not the causes of excess stimulation be taken up in more concrete ways, demonstrated, classified, and warned against, just as much as errors in nutrition, enlarged tonsils, and respiratory infections? Until a comparatively recent date, these evils of excess stimulation in childhood were manifested only among idle rich, so-called. Today they would appear to threaten a very large number of the constitutionally fit children of our population, which is indeed a serious matter. It is true that nature arms the normal parent or child most admirably, in selective instinct, as to what is good and what is bad. The difficulty regarding the quantity and quality of pleasureable excitement or mental stimulus a child, or children in general should have is selective proportion, in order to attain the moderate degree which is beneficial to health, and to avoid the excess which tends to destroy and break down. Along these lines I believe modern children need your help and need it badly.

Some of us have felt for a number of years that like the subject of instruction in sex hygiene, the teaching of proportional values of mental stimulation and excitement for growing children has been avoided, except in rare individual cases, and being rather complex in its nature, left generally to parents and circumstances. While free to admit that the subject is complex, it would appear to be intimately related, so far as preventive measures are concerned, to cultivation of self-discipline and a contented attitude towards greater simplicity in life. Can not much be accomplished in urging the profession, special and general, to take up the causes in a systematic way, and endeavor to show at the same time the methods of elimination on the ground that such affairs are a real menace to present and future health in childhood and youth. Mr. Herbert Hoover and the Massachusetts State Commission on the high cost of living have at different times most earnestly recommended greater efforts to simplify life, in order to stabilize American economies as a matter of future self-preservation for us all. May not we, as authorities in whom parents place trust for the safety of their children, rub it in everywhere we go that an elimination of the causes of excessive stimulation of children would not only add much to success in promotion of their health in general, but also give a vitally important boost to the resumption of the normal workings of the laws of economics, so necessary to the production and maintenance of the safe and sane homes?

It is true that each of the aforesaid causes might in itself form the subject of a paper or discussion. My purpose is more to call attention to the fact of these evils, which are operative mainly through discrepancies in sense of proportion for youthful work and play. Like candy, most of the causes infer commercial profit on a large scale, and if correctly and intelligently used, are capable of affording much benefit. But also, like candy, experience has proved that where financial opportunity exists, the majority are apt to abuse, and it becomes a question whether it is not far easier to form the habit of none at all, than just the proper amount at the proper time.

Now, as regards the aforementioned factors or causes of excessive stimulus to the modern American child, these may be classed under six main headings:

a First, the automobile: a modern marvel of mechanical skill, which has brought, and is today bringing, increased fresh air and opportunities for quick change of great benefit to children. Quite true; but what about the speed, the dust, the complex delicate machinery and the ever increasing cost? What of the engendered restless discontent or the unconscious strain of the undeveloped neuropsychic mechanism to absorb and digest, the rapidly moving train of interesting wonders the motor car necessarily brings up. It inculcates a desire not only for exciting changes at too quick intervals, but also for complex artificial rivalries, occupations, diversions and entertainments, creating dissatisfaction with the simpler and more health giving home pursuits, and in time actually eliminating these from the child's mental horizon.

As further evidence, observe the present trend of action among children as regards sailing, rowing, and motor boating. There is not nearly so much natural, purely healthful recreation when once the motor boats are dominant. But there is a great deal more tension and excitement. Children, with rarely endowed exceptions, no longer care to sail or row. Such things are too slow. They are no longer interested in the beauty of the water, the sunset, and the ways of the wind. Even the moonlight on a gently flowing tide, or river, has yielded its fascination to that of machinery, with its grease and noise. We are all for speed. What time did we make and what is the power of the engine, are the all absorbing points. One is forced into the idea that the whole expedition is a proving of mechanical efficiency for business or war, rather than a glimpse at healthful recreation.

Well, you would not prevent children from riding in their parents' automobiles? No, but it is the candy proposition over again, and a matter of proportion. Encourage the youngster to walk, or ride a bicycle, rather than desire to frequent motors, which are bad for the best Nature has to give us. Represent the motors as purely business necessities, with which the child's acquaintance should be as brief as possible until he reaches an age which enables him to hold a license. Surely such things are possible, and a much more natural and contented children's existence would result, especially for those whose people cannot afford motors, as they will not be constantly compared with children who appear to own them.

The second heading in listing of aforesaid causes considers:

b Machine-made music and modern dancing. As an ardent lover of music, both vocal and instrumental, I must admit to having very much enjoyed such mechanical triumphs as the graphophones and auto playelles, electric and otherwise. I believe many people did, when these machines were first made convenient for general use The eventual result, so far as children are concerned, seems most unfortunate. Instead of agreeable genuine music and rhythmic graceful dancing, the chief factors are speed and excitement, slightly checked on occasions by novelty or fashion. The mere ability to indulge in any sort of music and dancing, at any hour, seems to foster artificial tastes and supreme indifference to anything which fails to promote further excitement. The children are soon rendered too lazy to make any real effort at producing music themselves. Or if one individual has the talent or desire, it is promptly overcome, as the rest always prefer the ease and convenience of the quicker zest and infinite power of variation afforded by the perfection of mechanical reproduction.

The commercial aspect of these machines has, no doubt, helped to place music of wide range and variety within the reach of those who otherwise would have had no chance to hear it. But what, may I ask those of rational, evenly balanced temperament, is the ultimate and most natural "grand finale"? Is it not greater speed and more excitement in place of desire for or pleasurable knowledge of the music or dancing as an art, for social pleasure, or genuine benefit? The excess in quantity alone is enough to jar Longfellow's "Celestial Harmonies," as well as the psychic mechanism of childhood. One may not openly and utterly condemn musical machines, but children must be more restricted in their use and warned against excessive indulgence at any and all times. Otherwise before a child has had a chance to develop his physique he is in imminent danger of developing "nerves," which the fond parents are soon made aware of, after the damage is done.

c. Third cause, or group, includes motion pictures and theatres. These hold out many attractions, especially arranged for children, and if handled with care and judgment, may turn out wonderfully beneficial, from the educational and recreative point of view. Some of us recollect the tuneful music and essentially clean, witty lines of Gilbert and Sullivan's classics, and of the "1492" of the First Corps Cadets of Boston, as most delightful moments of childhood's regime, when we were allowed to go once or twice a year. Now, unfortunately, the commercial aspect dominates and informs us that features which appeal to intensive sensational and emotional excitement pay the most. Let us hope they will not continue to do so. Many people are apt to forget how difficult this same financial status was in the fight waged by our profession against "patent medicines" and the giant crackers and other dangerous explosives of previous anniversaries of our independence. Today it would seem to appear that this same commercial profit has greatly injured the nature of true sport in prize boxing and professional base ball, the amounts and figures of the money involved being the real excitement. It is not at all strange, in considering these necessary results, with regard to our coming generations, that efforts are now being made to establish certain rules and regulations for motion pictures. As in previous cases, the community as a whole, advised and backed by the medical profession, will endeavor to help parents protect their children from the dangers of excessive excitement.

d. Fourth cause, telephone. Another most necessary and mechanically delicate adjunct to modern life is the telephone. Originally intended as a business convenience and time saver, it has become a universal dependence. Like the other complex machines, its excessive use tremendously increases the opportunities among children for prolonged continued action and stimulative excitement. What may be termed "telephone abuse," or improper, unnecessary use of the instrument, also adds no small amount to the strain and tension of existence. So far as a child's health is concerned, this factor could be adjusted by correct intelligent training when once the importance of the subject as a factor was called attention to; but if not, it is probable that elimination for a period would be the most effective way.

In this connection may I relate the recent experience of some most excellent families who for some years have taken their children, during the summer season, to Edgartown, Martha's Vineyard, and places along the south side of the Cape. These people have ample means to afford a telephone, but they tell me, once accustomed to living without one, the children do not seem to mind, while the quiet repose and simplicity thus induced renders the home life far more natural and as it should be. The value of such a normal point of view with regard to the children's health, strength and resistance can hardly be overestimated. A happy life, with comparatively few complications and worries, has been the result of recognition of factors producing over stimulation in the young and the possibility of prevention of the same.

This brings me to the last heading, expressed by,

e. Fifth cause of group, which takes up "Too early or excessive school competition in studies, athletics and social life." Having learned the priceless value of a name and reputation in the line of success, many of our modern schools, both public and private, are naturally anxious to outdistance their rivals in all departments. In this way the superiority of the school and how closely it can imitate a university or college, would appear to entirely overshadow the basic principles that rugged constitution or what might be termed primary health and strength, so essential before reaching the actual "front," are never built up or fostered in the feverish atmosphere of a too complex, overstrained or hurriedly advanced quota of knowledge.

This business of mere children straining every nerve and being so excited or thrilled over exaggerated desire to keep a certain standing in the class, or win over a certain rival in the athletic or social field, must eventually have but one result, as every fair minded medical man knows. The system of automatic, interdependent controls of the functions of the "nervous system," established by the ductless glands, falls into a vicious circle somewhat akin to that of "autointoxication" in the digestive system. One notices more and more that in the private schools boys and girls are being removed and advised to drop back a year to regain their "equilibrium," not on account of any other reason than lack of "vitality." Furthermore, we too frequently hear the complaint, "Why is my child so delicate? Why do children seem to lack the vitality which the boys and girls used to have?" My good friends, they have this vitality, and even more, but it is unfortunately being used up by the constant temptations to burn up nervous energy with which they are surrounded on every side. While it is perfectly true that some modern methods are protecting and conserving the nerve vitality of childhood more than ever before, other modern methods are virtually obliging the children to use up this storage energy a great deal faster than they can produce it with their overstimulated, complex little organisms.

A distinguished author, the late Washington Irving, in a favorite classic, clearly demonstrates this condition and later the deplorable results of its misapprehension. The text reads in this manner: "I could be wrought upon to a wonderful degree of anguish or delight. Everything affected me violently and as I grew older the feelings remained equally acute, being too easily transported into paroxysms of pleasure or rage. It was the amusement of my relations and the domestics to play upon this apparently irritable temperament. I was moved to tears, tickled to laughter, provoked to veritable fury, for the entertainment of the company, who were ever amused by such a tempest of mighty passion in a pigmy frame. They little thought, and perhaps little heeded, the dangerous sensibilities they were fostering, and thus I became a little creature of passion before reason was developed. Soon I was disliked by my teachers for the very lessons they had taught me."

The unfortunate subject of this latter discourse grew up to commit a murder, which he vainly regrets, offering as a cause which might have been understood and remedied, the fact that he had always lived in an overwrought atmosphere. His father, though of noble rank, was sadly ostentatious beyond his means, and therefore continually straitened in his pecuniary circumstances. Authorities inform us there are quite a few people in America today who are doing this sort of thing. Such a case is certainly a warning against the fallacy of children becoming "little brothers or sisters of the rich," so-called, or being raised in an atmosphere of "false prosperity." These things certainly favor all the causes of excessive stimulation, if not constituting an actual causal group in themselves.

That children need normal natural stimuli is well known and widely acknowledged. The *Eugenics Review* for April wisely reflects, "Every child is a motor organism surging to move and do things. It is eager to translate thought into action to relieve emotion by motion. Beside motor capacities, there come all too soon: the senses, the feelings, the imagination, the possibilities for control and initiative. In addition to fundamentals like food and air, the developing as well as growing organism require a succession of liberating stimuli." These "liberating stimuli," however, should be as nearly natural as possible and not unduly continued or prolonged. Originally I take it, they were direct results of a closer contact with the scenes and forces of Nature and therefore controlled by Nature's checks. They were the sort of stimuli which cultivated self-discipline and fostered conservation of power, rendered experience fruitful and engendered repose during periods of inaction. One can hardly apply these attributes to the distinctly up to date "liberating stimuli" of youth and childhood. The main purpose of this paper is to indicate that the quantity and quality of such stimuli should be definitely classified, known of, and warned of, in their relations to children's health, as successfully as have been the proteids, carbohydrates, and fats, in relation to matters of diet and nutrition.

My eminent and reverend friend, Howard N. Brown, of King's Chapel, Boston, in one of his recent sermons stated that people are becoming so taken up with big problems of a world-wide nature they are wilfully neglecting to take sufficient interest to do well their smaller work as individuals. I take it the "woman's rights" movement, from which some of us expected great things, does not in any way appear to be increasing the scientific efficiency and labor-saving methods in the smaller or larger normal household. Those poor little primary affairs of economic and wholesome food well cooked, washing and laundry work, efficiently and reasonably done, amusements essentially non-extravagant and homelike in character, all these, on which rest the "king pins and bolts" of all the larger structures and accomplishments of society in all nations, would be made to appear as mere drudgeries, narrowing and distasteful to the modern point of view. Possibly the routine, every-day quality of such occupations has taken away the realization on the part of many that these primary every-day affairs form the bulwarks of healthy children in natural homes and, as Dr. Holmes once remarked, like a good pair of mammary glands, cannot be replaced or made up for by any amount of science and mechanics.

During the latter period of the recent war, every one admits, the Americans showed plenty of courage, abounding nerve, and ability to fight well. But the number of purely nervous breakdowns, considering the short time we were in action, has been remarked with some surprise by the statisticians. It may have been the unprecedented speed with which we were obliged to prepare; but it also may have been an indication of personalities having previously lived in association with speed, tension and excessive excitement, with a consequent habitual craving for the same. If this be true, what of our future generations? Are they no more to be endowed with solid, enduring, efficient nerve qualities like those of the supreme commander of the allied main front? Marshal Foch of the French Republic, on being asked what was the greatest "thrill" he ever felt, replied that he did not know what "thrills" were and had no time for them. Such leaders are not built up from overstimulated childhood, entertained by "ouija boards," and partial knowledge of their own subconscious selves, which affairs cannot be too strongly condemned.

SUMMARY.

The automobile, the motor boat, the graphophones, pianolas and cinematographs, together with wrongly proportioned extravagance in ambition and money, in schools and in homes, are all, in certain ways, seriously harmful to the existence and development of normal children. Chiefly so in that unless used with more than average care and forethought, they render children dissatisfied with normal home life. There, and there only, are laid the true foundations for natural strength and lasting qualities in mind and body. Though economic checks, such as the "high cost of living," and future shortage of gasolene, are bound to operate before long in the line of general stabilization, my present plea is that medical men should use every opportunity to warn present-day parents of the causes and evil, far-reaching results of overstimulation of children outside the home. Furthermore, that a less hurried, less lively, more simple existence, like that of some older nations, would appear to be what our children need most in order to build up staying, lasting qualities for further "international competition."

Take, for the sake of example, the lives, routine habits and customs of the younger children of the Scotch, English, Scandinavians, Danes, and Belgians. With our own greatly advanced scientific guides along the lines of physiology, pathology, nutrition, and hygiene, we should in the future render our American children as well qualified to fight for their existence as those of any nation or nations on earth.

Bibliography.

Folks: American Red Cross Director in France. Harper's Magazine for March, 1920, p. 457.
Boston Herald, March 28, 1920, editorial section, p. 1, col. 6.
The Brain, London, Eng., October, 1919, part 3, p. 171.
Huxley: On the Thyroid Gland. Illustrated London News, Feb. 28, 1920, No. 4219, p. 320.
Lancet, London, Jan. 24, 1920, p. 188.
Massachusetts State Commission on Necessities of Life, February, 1920.
Morse (of Boston): Feeding of Normal Infants. Second Year. Jour. A. M. A., Vol. lxxiv, No. 9, pp. 577-580, Feb. 28, 1920.
Boston Herald, April 3, 1920, p. 17; April 12, p. 2.
Eugenics Review, April, 1920, Vol. xi, No. i, p. 24.
Irving, Washington: Traveller, Vol. vii, pp. 86, 87.
Kemp: The Outlook, April 28, 1920, pp. 758, 759.

DISCUSSION.

L. E. Emerson, Ph.D., Cambridge: It is to me a great honor to have been asked to open the discussion on Dr. Johnson's paper, and I am very glad that Dr. Morse has corrected the mistake of the printer who inadvertently gave me an even greater honor with too little effort on my part. I am not an M.D., as he explained; I am only a doctor of psychology.

From a psychological point of view everything that Dr. Johnson has said is absolutely true, and I could not possibly add anything in the way of material or presentation except possibly in one respect, which will be to make it a little more schematic perhaps and to transform it into psychological terms. If we look at the child as a functioning organism in a group of organisms, that is, in society,—the child is stimulated and then reacts; overstimulation jams, to use a wireless telegraphy term, and the child is thrown into a state of excitement that may manifest itself in any form characteristic of that particular child.

Now it has been discovered recently that there is a psychological phenomenon previously suspected but not before well established, which has now received the term "repression." Under the circumstances of jamming, if the child or if anybody else is unable to transform the excitement that he receives, that excitement is repressed. Under those circumstances the repressed excitement takes up, more or less, an existence of its own in what for practical purposes of naming has obtained the name "complex." That term "complex" merely means something that is dynamic and is trying to get itself expressed in some form. Under those circumstances the organism, the child or the individual manifests symptoms. Now this affects the child in two ways,—either it prevents the child developing normally or it breaks down a development which has not become sufficiently well established to stand that strain. As an illustration of how it prevents a child developing, I may tell very schematically the case of a young girl whose father was one of the most brilliant public men probably that this country has ever produced, and under the stimulation of her father's brilliancy and her own home and public life, she attempted a similar brilliant attitude in school, more brilliant than true, which she characterized as her 8-year-old crime. It was simply that she falsified an examination paper and afterwards felt so badly about it that she was unable to talk to people because she thought they knew about it; she was unable to meet her parents and her friends because she thought they knew about it; she was unable to read a newspaper because she thought it was in the newspapers. She started in on a course that came very close to approaching dementia praecox for various reasons; one was the overstimulation of the parental activity, and the other was that the activity did not have an adequate form of expression.

Another instance of that sort of thing is illustrated by a child who in early age is overstimulated and breaks down from inadequate ability to meet the demands that the public puts on her. Such an instance was that of a young girl who, owing to the fact that her father was a drinking man, had to go to work at the age of 15 and was unable to do the work that was required of her. In other words, she was unable to transform the stimulations into forms, she was unable to transform the demands of the mechanism into which she was thrown into serviceable activity, and she started in with a St. Vitus dance sort of reaction, ending up in tics and finally into hysterical symptoms of various characters.

Now all this is schematized in the simple idea that emotions may be disassociated from their proper ideas and therefore find no possibility of expression because a normal emotion has got to be expressed through a normal idea normally associated with that emotion. If that emotion is not properly expressed or with the proper idea, it is disassociated and it becomes the complex that I have spoken of, and then it must manifest itself in some other form, which may be anything from a mild stammering, a slight hesitation in speech, a feeling of general neurasthenic unhappiness, or down to dementia praecox in one line, or to certain forms of reactions that have all the appearances of epilepsy in another line, or on another side if antisocial reactions are sufficiently strong, into all degrees of criminal reactions. From that point of view the inadequately expressed excitement may be criminal in one line or illness in the other.

The only thing that I wish to say in addition is again to express my sense of the honor you have done me in asking me to open the discussion on Dr. Johnson's paper and simply to say that psychologically and scientifically, everything he has said is absolutely true.

Dr. Erik St. J. Johnson: I was glad to have this paper brought down to more definite scientific terms, for which I have to thank the gentleman who opened the discussion. It is from the psychoneurological point of view a complex subject, but is, practically speaking, a simple one, in that it applies to the every-day home life of all normal children. Some of us have felt for a number of years that, like the subject of instruction in sex hygiene, the teaching of proportional values of mental stimulation and excitement for growing children has been avoided, except in rare individual cases, and (being rather complex in its nature) has been generally left to parents and circumstances. While free to admit that the subject is complex, it would appear to be intimately related, so far as preventive measures are concerned, to greater cultivation of self-discipline and a contented attitude towards greater simplicity in life. It sometimes seems as if the civilization of our present day had overreached itself. We must today, therefore, defend children against the alarming tendency (in this country at least) of hypertension and its eventual deleterious organic results, by urging a cultivation of a less strenuous, more simplified, more natural mental and physical existence for our children. Can not much be accomplished in urging the profession, special and general, to take up the causes in a systematic way and endeavor to show at the same time the methods and possibilities of elimination on the ground that such excess is proving a real menace to present and future health in childhood and youth?

The Significance of Meningeal Symptoms.

By A. C. Eastman, M.D., Springfield, Mass.

The unstable condition of a child's nervous system is the cause of many mistakes in diagnosis, and should make us very careful lest we place too much or too little emphasis upon the symptoms arising from a disturbed nervous system. Careful consideration of all data obtained by physical and laboratory examinations is necessary before we can safely pass judgment upon the significance of such symptoms. It is by no means always easy, even with such data at hand, to definitely distinguish between a meningism and meningitis or between the various forms of meningitis.

Most of the symptoms supposed to be characteristic of meningitis have also been found present in a number of other diseases. Convulsions, headache, stupor, vomiting, and high temperature may be present at the onset of many acute infections. The more definite signs of meningitis, such as rigidity of the neck, change in reflexes, Kernig's sign, Babinski's reflex, Brudzinski's neck sign, ankle clonus, and opisthotonos, have each and all, at one time or another, been found present in other acute infections besides meningitis. Especially in pneumonia, typhoid, influenza, and the exanthems, are we liable to find some of these signs present. Pneumonia, influenza and typhoid are not only peculiarly subject to meningismus in their early stages, but are also liable to develop a secondary meningitis later in the course of the disease. The poorly nourished, marasmic infant has frequently been diagnosed as a case of meningitis because of the pseudo-opisthotonos which is oftentimes present. The more we recognize the possibility of such signs occurring in various infectious diseases, the more difficult becomes the problem of a proper interpretation of their symptoms.

Whenever meningeal symptoms are present at the onset or during the early stages of a disease which we can positively diagnose as some infection other than a meningitis, we may be justified in declaring such symptoms due to a meningism, but whenever there is doubt as to the diagnosis, or the symptoms develop later in the disease, we must seriously consider meningitis.

From our present knowledge of immunity we know that most of the immunity of adult life is acquired during childhood, which means that the infant and young child is more susceptible to many of the acute infections, as well as being more frequently exposed to them. The various portals of entry are not yet well guarded, and the nasopharyngeal system and the blood stream give bacteria and their toxins easy access to the various parts of the body, including the central nervous system. Thus we find meningeal symptoms much more common in early childhood than in any later period of life.

It is beginning to be considered probable that the convulsions at the onset of an infection, as well as the early meningeal symptoms, are caused in many cases by actual changes in the quantity and quality of the cerebrospinal fluid. It is possible that these changes are brought about by the sudden increase in blood supply to the chorioid plexus at the onset of fever, causing a rapid increase in quantity of cerebrospinal fluid with its resulting increased pressure. The symptoms developing from this increased pressure will begin to subside as soon as the circulation has a chance to become regulated to the presence of high temperature, provided no bacterial invasion of the meningeal membranes has taken place.

In a series of cases recently published by Herrick and Dannenburg,[1] it was found that of a large number of infections, not including the various forms of meningitis, but having meningeal symptoms, 30% showed increased pressure of the cerebrospinal fluid, together with increased cell count and globulin content. To further quote their conclusions,—"These diseases are lobar and bronchial pneumonia, influenza, the exanthems, scarlet fever, measles, variola; herpes zoster, parotitis, typhoid fever, septic arthritis, pleurisy, migraine, reaction to typhoid inoculation, and others. The cerebrospinal fluid shows variation from normal in about one-third of the cases studied. Most, but by no means all, of the patients with a subarachnoid reaction have clinical meningismus. On the other hand, many examples of meningismus are without pronounced changes in the cerebrospinal fluid. The greatest caution should be used in making a diagnosis of meningitis or poliomyelitis from fever, meningismus, and the changes in the cerebrospinal fluid mentioned. Cases with less than one hundred cells should be viewed with skepticism, unless clinical, epidemiological, or other laboratory evidence is decisive."

Levinson[2] found that in one hundred cases of meningismus all showed an increase of fluid with increased pressure, but only fifteen showed an increase of cells and globulin content. None of these cases showed any physicochemical changes. Such conclusions as these, although they serve to explain many of the phenomena grouped under meningismus but associated with acute infections, at the same time make it all the more difficult for us to make a diagnosis from the cytological findings.

Although the meninges during childhood are more susceptible to infection than in adult life, yet even in childhood the protective power of the meningeal membranes against bacterial invasion is greater than that of other membranes of the body, and hence most infections of the meninges are secondary to infections somewhere else. Certain organisms have a special tendency to attack the meninges early. These organisms are the meningococcus, the poliomyelitis virus, and oftentimes the pneumococcus. In the first two especially, the invasion of other tissues is temporary and chiefly a portal of entry for the organisms which are then rapidly carried to the meninges. The streptococci and staphylococci practically always invade the meninges by direct extension from some local focus as the middle ear, mastoid, or cerebral abscess. The tubercle bacillus invariably is carried to the meninges from some primary focus in another part of the body, although the first symptom of tubercular infection may be the onset of a meningitis, appearing clinically as a primary disease.

Whenever we are in doubt as to our diagnosis, lumbar puncture is the only means of solving the problem. Since lumbar puncture was first introduced, we have been gradually led to believe that the cytological examination easily decided the diagnosis, that a meningism might, and often did, show an increased pressure, but the cell count was always low and there was no globulin reaction. The more the fluid has been studied, however, the more we find discrepancies in these findings. The fluid may show a comparatively high cell count with globulin reaction and still the child improve clinically, the meningeal symptoms disappear, and the original infection run its normal course. Or the fluid may show no reaction and have a low cell count, but the symptoms persist, and later a typical meningitis develop with its characteristic cerebrospinal fluid.

Also, in cases of true meningitis, we find wide variations from our former knowledge of the findings. Epidemic cerebrospinal meningitis may show a comparatively clear fluid and make us think we have a tubercular form of meningitis until we find the organisms present in the cells. Also the tubercular fluid may not differ at all from that of poliomyelitis in its fundamental properties, the clinical course of the disease being the only way to distinguish the two unless the tubercle bacillus has been discovered in the fluid. Fortunately, the types of meningitis which are apt to develop early and confuse our diagnosis with some other common infection are the types which usually show positive bacteriological findings in the spinal fluid, and a lumbar puncture becomes of definite assistance in these cases, even when it proves to be a meningism with high cell count and globulin reaction but negative bacteriological findings.

Because of the difficulty in finding the tubercle bacillus, our chief trouble centers around the diagnosis of tubercular meningitis as opposed to poliomyelitis, encephalitis, or a meningism secondary to some acute infection with a mild or moderate onset. In these cases, repeated punctures with a careful searching for the tubercle bacillus, together with the clinical progress of the infection, will sooner or later clear up the diagnosis. Such repeated lumbar punctures can safely be done once a day until we have secured sufficient evidence to make the diagnosis. It is surprising, oftentimes, to see the rapidity with which the findings in the cerebrospinal fluid will change and clear up what was apparently an obscure condition. As long as there is any doubt as to the diagnosis, we must never be satisfied with the results of a single lumbar puncture. A typical case to illustrate this point is the following:

E. M., 4 years, admitted to Springfield Hospital April 15, 1920. F. H.—Paternal grandmother died from tuberculosis. History otherwise negative. P. H.—Always well except pertussis three years ago. P. I.—For past month complained a great deal of "pain in stomach" after eating. Pain relieved after bowel movement. No nausea or vomiting. During past week has lost weight; has been very peevish and wished to be held. A question of some discharge from left ear. P. E.—Well developed and nourished. Rather drowsy. Cries if handled or moved. Tender over left mastoid. Slight rigidity of neck. No definite change in reflexes. Throat, chest, and abdomen negative. Seen by aurist and left ear incised. Temperature, 102; pulse, 140. For two days her condition remained about the same and the symptoms pointed toward a meningism secondary to the ear. Lumbar puncture gave fluid with no increased pressure; cell count, 40; globulin, negative; no sediment, and fluid sterile. Leucocyte count upon admission, 10,000. Two days later, 17,000. A second lumbar puncture the next day showed no change in fluid except a differential count gave 85% polymorphonuclears. Five days after entrance her condition became worse and she then showed a typical clinical picture of tubercular meningitis with characteristic reflexes. Two incisions of left ear drum had produced no results although there appeared to be evidence of some trouble there. A third lumbar puncture gave increased quantity with increased pressure. Fluid clear. Cell count, 130; globulin, positive. Differential count showed lymphocytosis. Typical sediment of tubercular meningitis. During the next two days the child grew rapidly worse and died. Autopsy showed many small miliary tubercles on surface of brain and at base, a slight exudate at base. Left internal ear showed chronic necrosis.

The cases of tubercular meningitis with sudden, severe onset usually develop much more rapidly and give other signs as paralyses, ocular symptoms, neck sign, stupor, etc., which altogether help to differentiate the condition from a meningism, but which might still be confused with poliomyelitis or encephalitis. The further clinical progress of the case is the only means of differentiation between these diseases, as the cerebrospinal fluid in such cases of tubercular meningitis may very often show no characteristic properties before death takes place.

Gingold[3] has described a reflex strabismus as an early diagnostic sign of basilar meningitis. His description of the sign is as follows: "By flexing the head on the chest, either a bilateral or unilateral internal strabismus develops, which will last as long as the head is kept in flexed position, and disappears as soon as the head is relaxed. In many cases the strabismus is accompanied by a retraction of the upper eyelids. In some cases I have also noticed a contraction of the pupils. This reflex strabismus was present in the early stage of almost every case that came under my observation in the past seven years. In the late or paralytic stage, flexion of the head failed to produce a strabismus. The reflex strabismus, above described, proved, in my experience, to be such a reliable symptom that I have often made a diagnosis of basilar meningitis days before any other meningeal symptoms appeared."

The various chemical and physicochemical changes in the cerebrospinal fluid serve further to differentiate the different types of meningitis, but are chiefly possible to obtain only in the large laboratories. For practical purposes we must rely upon the presence of increased fluid, increased cell count, differential cell count, globulin reaction, presence of sediment, and bacteriological examination to make a diagnosis.

CONCLUSIONS.

Meningeal symptoms are frequently present in many of the infections of childhood and may represent either a meningism or a meningitis.

Unless definitely positive of some diagnosis besides meningitis, the only means of determining their significance is by lumbar puncture, which, in many cases, requires several repetitions before we can make a definite diagnosis.

Like other laboratory examinations, the findings in the cerebrospinal fluid must be considered in conjunction with the clinical progress of the disease.

In the final analysis we must depend upon the bacteriological examination to furnish a positive diagnosis.

REFERENCES.

[1] Herrick and Dannenburg: Observations on the Cerebrospinal Fluid of Acute Disease. Jour. A. M. A., Vol. lxxiii, p. 1321, November, 1919.
[2] Levinson: Qualitative and Quantitative Changes in the Cerebrospinal Fluid of Various Diseases and their Significance. Am. Jour. Dis. of Children, Vol. xviii, p. 568, December, 1919.
[3] Gingold: An Early Diagnostic Sign in Basilar Meningitis. Arch. Ped., Vol. xxxvii, p. 19, January, 1920.

DISCUSSION.

Dr. J. J. Thomas, Boston: Dr. Eastman's paper is one which covers, I think, the points very fully and very completely. There is not much that I can add to it, I am sorry to say. Perhaps there may be one or two things that may help to bring out the idea a little more definitely. At least I may be able to add something in that respect to what he has said. We probably have to distinguish in these cases which show clinical signs of meningitis between different groups of cases: first, those of meningitis where we have an actual infection of the meninges by some form of bacterium. These are familiar to most of you, and the one which is most difficult to diagnose, as you all know, is the tuberculous form, because the tuberculous is the one in which it is most difficult to find the germ when examination is made of the cerebrospinal fluid. In addition in regard to the infectious forms, that is, the true meningitis, I may add just a word, and that is that very frequently on doing lumbar puncture you may miss the organisms on examination of the fluid. On the first time that the fluid is withdrawn, I have frequently seen the fluid perfectly clear and on the second or third drawing the organism has been found, and that is true not only of tuberculous meningitis, for which you may have to examine the fluid many times before the germ is found, but it is also true of the epidemic form due to the meningococcus. Probably this difficulty would be less frequent if we did ventricular puncture more often or punctures of the cisterna magna at the base of the skull. That strikes us all as a dangerous procedure, yet if carried out with precautions, is a practical one, where the needle is introduced between the base of the skull and the first cervical vertebra and the fluid withdrawn. In tuberculous meningitis the meninges at the base of the brain are the parts first involved, and it may be some time before the germs show in the fluid obtained from the lumbar part of the spinal cord. So that, as was rightly said, repeated lumbar puncture is very important, or I may say in addition to that, the puncture of the ventricles may lead to a diagnosis earlier, or show that we have to deal with a germ.

You are familiar with the fact that the character of the cells obtained in the spinal fluid varies. In the epidemic form we get an excess of polymorphonuclear leucocytes, and in the tuberculous form we find the lymphocytes predominating; but those are not absolute, and we find variations. Next we ought to speak of the cases that give meningeal signs which are due to infection of the brain. Among these are the early encephalitis cases which Dr. Eastman has spoken of, and I should add to that the cases of poliomyelitis in which there is a meningismus. In these cases we have some virus which is in the nervous tissues of the spinal cord and occasionally of the medulla, and in the epidemic forms in the brain itself. And then we have the ordinary encephalitis where the virus which causes the disease is found in the cerebrum, and the reaction is not due to the actual infection but is more in the nature of a meningismus. Do not overlook the cases of encephalitis of the epidemic form, which is rare, but more common than we thought heretofore. Here the cells may be increased just as they are in other forms of encephalitis, but we find no germs.

Now, as for true meningismus, or the serous meningitis of Quincke and other writers, I think we should limit the term to the reactions where the sign is due to toxic substances. I have seen it in various acute infections, and in malaria, where we found the plasmodium in the blood, and the child had a convulsion every second day. There is a reaction of the meninges so that various poisons will give you these irritative phenomena, and while we have some reaction shown in the spinal fluid, it is not so intense as in true inflammation, and the germs are absent. I think among all signs the clinical symptoms must not be neglected and among these the most valuable is the variability of the symptoms.

Dr. A. C. Eastman: I have very little little more to say, except perhaps to emphasize the importance of repeated punctures, especially in connection with the early meningeal symptoms, that is the symptoms coming early in the disease in the line of meningismus. The tend. ency is always to wait until you feel sure that you have a meningitis and then do a lumbar puncture; but I think if we are at all uncertain we ought to go ahead and do a lumbar puncture early, and if we don't get assistance in the first puncture we can repeat. Also in these cases of meningismus we do good by relieving symptoms. In cases of pneumonia, typhoid and similar diseases, frequently a lumbar puncture by withdrawing a certain amount of fluid, will reduce the symptoms and make the child more comfortable.

PARENTAL RESPONSIBILITY.

By Henry I. Bowditch, M.D., Boston.

We are beginning to value life more and more these days. We, the human part of it, possessed of body and mind, are given our wonderful bodies to look after and bring up; as well as our minds, possessed of freedom of will, to educate. This physical and mental responsibility lies largely at the door of our parents. As a recompense they will get, through development and maintenance of health, all important happiness.

During the early years, parents, by nature, are the guardians of their children. A mother wishes her child to weigh the average as well as be normal. They are inclined to leave things to nature to decide for them, not using their minds, going along carefree as much as they can; only being awakened when some carelessness leads their children into disease, and when awakened, to find them handicapped physically or mentally.

Science has shown and still shows us how we can prevent much of our morbidity and lower the mortality. Prevention is the slogan which stirs us. This science we doctors have produced and are using, but only too inefficiently, even by us. We must awaken to our responsibility of directing our families and get them to realize their natural parental responsibility.

So far the physical field has been only surface scratched, and now the mental must take its turn. A normal mental development must be secured and its pitfalls and dangers well understood and guarded against.

But what are the responsibilities?

First, mature mankind must look to their stock and, naturally, rationally look at eugenics (the forbears of their children) with sanity. We must try to educate the voter in his use of his privilege of suffrage to affect public opinion or legislation along this line. We must pay more attention to our own race in producing normal individuals.

Second, with normal, healthy adults, it is fair to think seriously of the size of the family. We must play fair with the mother as to number of pregnancies, work before and after pregnancy, and also see that the father realizes the length of convalescence, physical and mental, necessary ere he asks his wife to undergo another pregnancy.

Third, children. A new life,—in a child such a great pride to parents,—is given us. Here it is we men are apt to make our first big error; we leave it too much to the mother. She needs support and encouragement which we frequently omit. As the body and mind develop, let us study with the mother its growth, give the first steps of discipline and character formation, and watch carefully for points of danger. These primary beginnings are all important. Every animal in puppyhood must be watched, directed, controlled and guided. The maternal heart naturally wants to ''nurse'' her offspring. It is up to us to aid and everywhere encourage her. As time goes on, her love will try to watch and protect her offspring from falls, both physical and mental: but how much better she will do it when her husband understands her,—for always at home, constantly at a nervous tension in watching for the wrong, it is no easy thing to do a mother's job; therefore we must support our mothers and educate our fathers.

A normal physical development is essential to the serene, happy child and parents. This is especially true and important to establish in the first years. Regular lives, guided by kindness, affection and firmness, will aid in quicker obedience. A child will quicker understand its parents and gain the envied respect for mother and father.

With the growth of body and the child up and about comes the experimental age. This is a period when patience of an extreme type needs to be used. The child cannot express itself and finds the cry an admirable ally and uses it to the limit. It wants what it wants and struggles hard to get it by hook or crook. What is said by the elders must be cautiously weighed. We will be considered truthful until we slip up, forget, and prove we are not accurate and do not do what we said we would. These first years are all important for the development of truth, honesty and love. Fear, when found, should be investigated with all fairness. Confine to simple facts and tell the truth. Here we frequently have to deal with the nursemaid. Her physique and character have an untold influence on those given into her charge, for she can produce fear, deceit, conceit, and other lasting traits. She has no real authority and yet is placed in the trying position of the mother. A good nursemaid is invaluable and not infrequently has more to do with the character forming period than either parent. This is unnatural and in late years leads to hard misunderstandings to say the least.

In the pre-school age the mind is an ever-present question and because of the virile, virgin soil that it is we must look sharp. The memory is given and holds what it hears and sees. Curiosity must be satisfied; facts and truths explained. Don't let our mothers and fathers pretend they know for all too soon the facts will out and filial respect will suffer. Let us be prepared to answer questions of religion, God, and the hereafter. If we cannot answer, do not confuse the young mind, but be frank and acknowledge our ignorance. This period of education needs much thought and we physicians should use our influence to assist the puzzled families.

When school life begins the die is cast. Our characters, with all their variations, are expressed to the public in what the child says and does. Now we come into that stage when companions show their influence. Our young are already autocrats or democrats. Of course these characters are not formed, but the undesirable weeds are there. We must watch for them and still think of the future citizenship and our national responsibility.

The question of education usually interests the father. He begins to awake, whereas much of his worries can be relieved by thinking and acting in the earlier days. The question of school, public versus private, presents itself; more with us in the East than the West, where all go to the public school. In a part of the West at least a scholar attending a private school is considered deficient.

Adolescence and its problem in turn presents itself. True comradeship between parents and children will have solved these feared subjects. The only thing for us all is to know and think rightly; and to speak, when questions arise, simply and truthfully. We physicians, so often asked to speak to young people, should make our friends think and read. They are the natural ones to turn to and should be the best ones to handle this.

When college freedom dawns and boys and girls have fulfilled this primary education the generation has almost completed its maturity. Then it is that we see where our parental training has led, whether we have made good or no. Our children are the real answer to the questions,—have we really thought? have we realized that they have a mind as well as a body? Do we know that we are responsible to a very great extent for their generation or degeneration?

We medical men, it seems to me, hold a wonderful chance to assist our families to make good and thus carry out our opportunity of being well rounded out physicians.

DISCUSSION.

Dr. Maynard Ladd, Boston: I think we ought to congratulate Dr. Bowditch on the paper that he has read to us. It makes one realize that the subject of pediatrics is what the etymology of the word indicates—the care of children—that it is not limited entirely to that which is covered by the medical and surgical side of the care of children. We, to do justice to children that we have under us, must consider the psychological side and in a much broader way than we have been accustomed to in the past.

Now this question of parental responsibility is one that has always interested me and has puzzled me a great deal. I was much interested in a saying that was attributed to Holmes, "that the training of a child should begin with his great-grandparents." On that basis I see why Dr. Bowditch need not worry about the training of his own children. But what about the average parent? That is a difficult question. You get out of a thing what it was intended for, depending on the quality that is put into it. The inherited instincts are very strong in a child, and when you see the child reflecting the weaknesses of his parents, how are you going to correct these tendencies? It seems to me the American child sits on the family throne and wears the crown and wields the sceptre, and the American parent is a very selfish, self-sacrificing, indulgent person. It is because of those very virtues that the parents show that the children often develop into selfish and self-centered, undisciplined children. And yet when you see such children in your office, when you realize that the physical condition for which they are brought to you is dependent very largely on these uncontrolled instincts for which the parents are directly responsible, how are you going to correct that trouble? What can you do to make a weak and indulgent parent a wise guardian of the child? That is what we are up against all the time; and we must realize that a great many of these children have not good stuff in them. Some of them are constitutionally unfitted for the lives that are being laid down for them. Some of them cannot be helped a great deal, but there are many who are misfits who have been put in the wrong place; their adaptation to life has not been carefully studied. We can do a great deal for that type of child. I wouldn't underestimate the importance that has been attached to the development of the physical health of the child; we could not emphasize that too much. But it seems to me that there has not been sufficient emphasis on the development of character building in the child, and it is in that the modern child is most lacking. He is selfish, he is self-centered, and he is undisciplined; and it takes time to knock these qualities out of him; and in the meantime in childhood, because of these qualities, we find many conditions for which the parents come to us for consultation.

There is one thing that I would also bring out, and that is the great responsibility which the child-placing agencies assume when they take children out of their homes and away from parental responsibility. We are waking up to a realization of the importance of more careful medical supervision of these children who are removed from their natural guardians, and it is extremely important that these agencies should appreciate the social and psychological as well as the medical side of the problem.

Dr. Henry I. Bowditch: I am glad to see so many present. The only trouble is you are afraid to stand up and make a contest. I always feel whenever I have anything to say as if I were throwing responsibility from my shoulders on to others,—that a thought once expressed by a mind, if properly demonstrated, should more or less stimulate the same kind of thought in other minds. In that way, although we may not see it, the world goes on advancing. You have had cases of undisciplined children come to you in your office that upset you completely. In 99% the lack of discipline has been due purely to an overworked mother who has not had the time to give her best to her children. It is unfortunate to see a poor woman who has worked all day long for a dollar and a half, go home and cook her food and be always perfectly happy from the time she came to the time she left. There, of course, it was mind over matter. We can help much better where we understand and can treat aur patients mentally. We must understand and always remember that child-bearing is The Greatest Thing in the World, and that if we do not admit it we are deceiving ourselves, because to be honest with ourselves, we all want to be married and we all want to have children. The only thing is to do it right. Therefore you have got to push on and make parents that you come in contact with more alive to their parental responsibility. I am poor at it myself. I see lots of deficiencies. It is a terribly interesting and live subject. There is a plan I have developed from which one may get a great deal of light. I have not spoken about this before except once in Chicago and that was for the information of "family forums." I have a group of families (friends), and we meet once a month. We all have children, and discuss the education of our children. This takes up every subject known to man as the child comes into contact with everything, even Bolshevism, the police, our help, public schools, movies, and so forth. We discuss an exceedingly interesting group of questions; we meet around a board without any servants present; we do our own waiting, our own cooking. The meetings last for a number of hours. The men like it, and the ladies like it. If you get the right idea, I assure you you can have a congenial, pleasant, productive winter's work. You can produce other family groups, maybe, among your friends. It does help you to solve problems many times about the government of children and the control of children; a very useful plan.

Original Article.

ORCHITIS IN MUMPS.

By Conrad Wesselhoeft, M.D., Boston,

Visiting Physician, West Department (contagious), Massachusetts Homeopathic Hospital.

[From the Evans Memorial Hospital, Boston.]

(Concluded from page 494.)

PROPHYLAXIS.

The prophylaxis of orchitis in mumps is as yet an unsolved problem; consequently all measures intended to prevent this complication are more or less speculative and empirical. In the first place, rest in bed during the first eight days from the onset of the parotitis,—though logical from our theoretical knowledge of the nature of the disease,—does not bring practical results. Dukes[8] in 1899 stated that if patients were kept in bed eight days orchitis would not develop. But in 1900 he retracted this assertion, because in a later series of thirty cases he had orchitis in 20%, although "not one boy moved from his bed for any purpose whatever for eight days." In Radin's[9] series the patients who were allowed to go to meals and walk about the wards, showed no greater incidence of orchitis than those who remained in bed throughout. The frequent observation of orchitis in missed cases in some epidemics has been used as an argument that testicular involvement is increased by not keeping the patient quiet. This is purely speculative, as we have no means of knowing the incidence of orchitis in missed cases.

On the assumption that the contagium might be transferred from the mouth to the urethra, and thus reach the testicle, patients have been cautioned to avoid handling the genitals. The results of carrying this theory into practice have also been found to be negative from clinical research. In the mumps wards at Camp Wheeler, Georgia, it was found "that careful sterilization of the hands and protection of the glans penis did not reduce the incidence of the complication."[9]

Olivier* recommended the use of a continuous faradic current to arrest the atrophy of the testicle. His results, however, do not seem significant, and those who tried his method were not sufficiently encouraged by successes to venture any systematic clinical research on this point.†

The use of convalescent mumps serum may be of value in preventing orchitis and subsequent atrophy, but here again the efficacy of this measure has not been properly established. In 1915 Hess[74] used serum from convalescent cases in 20 children who were fully exposed to the disease during the epidemic at the Hebrew Infant Asylum, and none of these children contracted the disease. Gradwohl[44] and his associates used 5 cc. of convalescent mumps serum in several cases. This seemed to allay the acute symptoms, but the experiment was not sufficiently far-reaching to show whether the serum has a prophylactic value for orchitis, or whether, if used during this condition, it prevented atrophy.

TREATMENT.

The treatment of orchitis includes measures against the symptoms in the acute stage, and the endeavor to avoid subsequent atrophy. In the first place, we have to deal with the acute pain. The local application of cold would seem to be the first logical step. It has been my experience that a cold compress frequently renewed is just as efficacious as an ice bag in relieving the pain.* Whether or not it has controlled the swelling is a difficult question to decide; furthermore, the local application of heat is more agreeable in some cases. Presumably such external applications as allay pain would tend to do so by checking the swelling, since the pain is the result of pressure from the swelling, but the benefit derived from cold and heat in this way is still a matter of discussion which we cannot enter into here. Elevation or support of the testicles, with or without hot or cold applications, is of help.

All manner of local applications have been recommended, including turpentine, liniments, ichthyol, hamamelis, belladonna, guaiacol, methyl salicylate, "poppy head water," lead and opium, iodoform, collodium, ointments of iodine or mercury, etc. Cauterization, electricity, and the application of leeches have been employed. Those experienced in dealing with this condition have judged the results they have obtained by these measures with scepticism, and I mention them as a mere matter of historical interest. For the most part they are based on the wildest sort of empiricism, and their efficacy has always remained exceedingly doubtful when checked up by careful clinical observations covering a sufficient number of cases.

The same may be said of the use of drugs internally. At one time jaborandi was employed somewhat extensively in France, but its failure in the hands of men like Servier* caused it to fall into disuse.† Antipyrin, sodium salicylate,‡ mercury, lead,§ belladonna

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Quoted by Lauterbach,[57] loc. cit., and Pliqué,[3] op. cit., p. 168.

Eisenschatz used massage of the testicle with the hope of reducing the swelling and obviating atrophy, but without success. (Comby,[1] op. cit., 197.)

Schottmüller found cold compresses to be usually uncomfortable and without benefit in reducing pain. (op. cit., p. 91.)

Servier[26], op. cit., p. 535.

Martin[27], in 1894, used pilocarpine s. q. and claims that benefit was derived from its use, particularly in suppressing the pain, although it is to be noted that six of his nine cases of orchitis developed atrophy. Martin's observations even on this small series deserve full consideration in view of his painstaking researches in regard to the relative value of various treatments in 48 cases of mumps. (*Op. cit.*, p. 210.)

Luehe (*loc. cit.*) found salicylic acid useless as a prophylactic for mumps, but it is interesting that he used it internally in conjunction with iodine ointment externally as routine treatment, and had only one case of orchitis out of 118 cases of mumps.

Joly[15] used sodium salicylate as a routine and had 13 cases of ocular complications out of 37 cases of mumps. He does not mention the occurrence of any orchitis.

Mercury and lead have both been recommended externally, but no conclusive evidence has been given in support of these applications. In so late a work as 1915, Back recommends the old-fashioned lead and opium wash in conjunction with "adequate purgation" for orchitis (Back, I., in A System of Treatment, Latham and English, New York, 1915, Vol. ii, p. 906). Regarding this preparation: "It is an irrational mixture, as the opium principles are not absorbed; its action is that of lead acetate." (Bastedo, W. A., Materia Medica, Pharmacology, and Therapeutics, Philadelphia, 1914, p. 363.) And what can be expected of the lead acetate in this condition? Nothing so far as can be learned from Bastedo, Cushny, Meyer and Gottlieb, and other pharmacologists.

Since no direct beneficial action can be expected from the local application of mercury and lead, the only benefit would have to come from an indirect action. A possible homoeopathic action is explained by the fact that mercury by mouth has been known to set up orchitis, but the evidence of this is scanty (Cyclopaedia of Drug Pathogenesy, London, 1890, Vol. iii, p. 276). On the other hand, in reports of lead poisoning we have infrequent examples of orchitis followed by atrophy. (*Ibid.*, p. 655; Schulz, H., Wirkung u. Anwendung der Unorganischen Arzneistoffe, Leipzig, 1907, p. 253.)

and pulsatilla[*] have all been used extensively in orchitis, but nowhere has clinical research thrown any light on their actual remedial or prophylactic effects by oral administration in this condition. Until internal or external use of any drug can be shown by clinical research to be of definite value, or even of more probable value in orchitis than has yet been demonstrated, all pharmacotherapeutic measures must rest on speculative hypotheses. It must be remembered that simple acute orchitis is in itself self-limited, and is often of short duration; consequently one should weigh carefully any evidence of a possible remedial nature derived from measures directed toward the diminution of the pain and the swelling, as well as toward the avoidance of subsequent atrophy.

The constitutional treatment need not be entered into here, since this depends upon the degree of toxaemia, and upon the parts affected, such as the gastrointestinal tract, the pancreas, the brain, etc. These complications must be taken care of according to the usual methods. Baths are sometimes beneficial when the temperature is very high, and are more efficacious and safer than antipyretic drugs. I fail to see any indication for the routine purging advocated since the days of Hippocrates and Galen, and I have yet to be convinced that internal medication is satisfactory in orchitis.

Scepticism in these darker fields of medicine should encourage research rather than intolerance.[*] The treatment of orchitis may be compared in many respects to that of acute otitis media. Local applications are known to be palliative in both conditions, but when these fail to control the symptoms, surgical interference should be preferred to the use of opiates, both to relieve the pain and to avoid the more serious consequences. An incision through the tunica vaginalis and multiple incisions of the tunica albuginea relieve the pressure by the escape of the serous fluid and stop the pain, and we may infer that this avoids epithelial and interstitial destruction from continued high tension. Still I cannot feel that this operation is indicated so often as is paracentesis in acute otitis media or the multiple incisions in acute gonorrheal epididymitis, but in experienced surgical hands it is obviously as safe and quite as logical.[*] In mild cases with only a moderate degree of pain and swelling, it may be only necessary to cut through the tunica vaginalis. Schottmüller[†] cites the case of a unilateral orchitis in a boy of 12 treated on the second day by a puncture of the tunica vaginalis, which was followed by lowering of the temperature and by uneventful recovery without subsequent atrophy. The extent to which operative treatment prevents testicular atrophy must await the reports of further observations.

Another method of treatment which offers considerable hope is the use of convalescent blood serum. Gradwohl[*] and his associates used 5 cc. subcutaneously or intravenously. They report that the pain and fever were promptly abated, and in one case of orchitis the pain was relieved in five hours. No remark is made regarding subsequent atrophy. The value of convalescent serum would appear to be in its prophylactic virtues. Thus it may be used to ward off the disease itself if given early enough; or, if given during the acute parotitis it may avoid other complications. This, however, is a question for the future to decide. For the present there can be no objection to its administration early in the acute orchitis. when local applications of heat or cold are inadequate, but it should not be used at the expense of operative interference, which is then the only logical procedure.

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[*] Pulsatilla has been strongly recommended by the homeopathic school, owing to the frequency of pain in the testicle and spermatic cord after taking the drug. Here again the evidence of its homeopathicity to true orchitis is meagre. (Cyclop. Drug Path *ibid.*, p. 689-700). Clinical evidence in its favor is lacking so far as any research is concerned. Lowe[76] obtained no benefit from pulsatilla in his cases. At the West Department of the Massachusetts Homeopathic Hospital pulsatilla in low dilutions has been of no apparent benefit in allaying the pain or shortening the course of mumps orchitis.

[*] The following historical note on the treatment of mumps in 1810 gives food for thought, lest we fancy our modern ideas and methods beyond the criticism of future critics:

"I endeavored to bring on suppuration by frequently renewed hot poultices . . . Blisters and spirituous applications brought the disease to a speedier termination, while the application of flannel or leaving it to nature only protracted it for a day or two longer; and when the inflammation had once proceeded to the testicle, no method was successful in bringing it back to the parotid gland. . . . After the metastases to the testis had taken place, I was on my guard against its proceeding onward to the brain. A strict antiphlogistic regimen was enjoined, full and repeated purging employed; and, where the habit of body, pain, and febrile symptoms, pointed out the necessity or repetition of venesection, it was had recourse to. Emetics were given in several cases with the evident effect of shortening the period of inflammation, and when at its acme, of rapidly reducing the swelling." Headache developed in two cases. In these, "no time was now lost in taking active measures. They had formerly been bled and purged; the bleeding was repeated to the extent of 24 ounces, from a large orifice; drastic purgatives were given; the whole head was shaved; blisters applied to the temples; and cold over the rest of the surface . . . In this way the headache was relieved in 36 hours." (Noble[23] *loc. cit.*)

[*] The operative treatment of orchitis and epididymitis of gonorrheal origin has met with success in the hands of many genito-urinary surgeons. Vidal used a bistoury. Trékaki preferred the bistoury to the trocar in the treatment of 20 cases, and remarked that the pain was alleviated in one to six hours, and often immediately. This treatment was repeated as often as necessary. Velpeau, Monod, and Tocrillon cut the tunica vaginalis. See Trékaki: Maladies vénériennes. De la ponction de la tunique vaginale dans l'orchite aigue blennorrhagique. Gazette Méd. de. Paris, April 16, 1892, p. 184; Baermann, G.: Ueber die Pathogenese der gonorrhoischen Epididymitis und ueber Versuche dieselbe durch Punktion zu behandeln. Deutsch. med. Wochensch., Oct. 1, 1903, p. 720; Lydston, G. F.: Impotence and Sterility, Chicago, 1917, pp. 112-114; Abraham[17]: The Operative Treatment of Acute Epididymo-Orchitis. Edit., The Hospital, London, April 6, 1912, p. 9.

[†] *Op. cit.*[3] p. 49.

[*] *Op. cit.*[44] pp. 726, 727.

PROGNOSIS.

Since orchitis occurs in 18% of all cases of mumps in the male, and since appreciable atrophy takes place in 55% of all cases of orchitis it is natural to infer that the impairment of sexual function may be a serious consideration in this disease. However, the degree of such impairment, as figured by the degree of atrophy, is not an index of the procreative power, so long as the healthy portion of the testicle can supply enough spermatozoa to guarantee fertilization of the ovum. The anatomy and physiology of the male generative organs offer possibilities in the way of assuring procreation even after considerable damage to one or both testicles. Nevertheless, it is well to bear in mind that the testis is not always the only portion of the generative tract to suffer. Destruction of the epididymis or of the vas deferens, and atrophy of the prostate and Cowper's glands, may place greater difficulties in the way of reproduction than partial testicular atrophy, but destruction of these adnexa is much less common than in gonorrhea, the pathology of which must be clearly differentiated from that of mumps.

Atrophy of the testicle may, in the course of time, become associated with an increasing neuralgic pain radiating up and along the spermatic cord. In the case recorded by Stolz* this pain was so severe that the testicle was removed by operation, which afforded complete relief. Curling warns us that even after castration the pain may return in the cord.*

Nowhere have I found mention of a eunuch as a result of mumps,—a fact which is explained by the infrequency of orchitis before puberty. It cannot be denied, however, that mumps may bring about sterility in the male, as evidenced by the only two cases which I have been able to gather from the literature. In one of these cases, however, the double testicular atrophy was not stated to be complete, but it was associated with induration of the epididymis: furthermore, there is reason to believe that a portion of the testicular tissue might have been normal. In the other case both testicles were said to be completely atrophied and the epididymides were not apparently affected.

Partial atrophy of both testicles may diminish both sexual desire and sexual powers, but it does not in itself abolish the power of procreation. It is therefore incumbent upon the medical profession, as I have already suggested, to give these patients every assurance of being able to regain their sexual functions, so that fear of impotency may not add another obstacle to their already impaired generative organs.

Finally, we may hope that the enlightment that has come from timely surgical interference, when indicated by the severity of the symptoms, may before long render the bugbear of sterility from mumps orchitis a thing of the past.

REFERENCES.

[1] Comby, J.: Les oreillons. Bibliothèque Médicale, Charcot-Debove, Paris, 1893, pp. 11, 105, 119, 127, 128.

[2] Laveran: Des oreillons chez l'adulte et en particulier de l'orchite ourlienne. Bull. et mém. de la Soc. de Méd. des Hôp. de Paris, Vol. 15, p. 68.

[3] Schottmüller, H.: Parotitis Epidemica, in Nothnagel's Specielle Pathologie und Therapie, Vienna, 1904, pp. 44-59.

[4] Paget, S.: The Connection between the Parotid Glands and the Generative Organs. Lancet, London, Jan. 30, 1886, p. 227.

[5] Paget, S.: Parotitis after Injury or Disease of the Abdomen or Pelvis. Brit. Med. Jour., London, 1, 1887, p. 613.

[6] Morel, L.: Étude clinique et experimentale sur les parotidites post opératives. Paris, 1908, p. 11.

[7] Pliqué, A. F.: Le prognostic et le traitement des oreillons chez l'adulte. Jour. de méd. et chir. prat., Paris, 1915, lxxxvi, p. 163.

[8] Dukes, C.: (*a*) The Incubation Period of Scarlatina, Varicella, Parotitis and Rötheln. Lancet, London, Oct. 29, 1881, 2, p. 743; (*b*) *Ibid.*, April 29, 1899, 1, p. 1147; (*c*) Orchitis in Mumps. Lancet, London, Jan. 6, 1900, 1, p. 25; (*d*) The Incubation period of Mumps and its Orchitis. Lancet, London, March 24, 1906, 1, p. 861.

[9] Radin, M. J.: The Epidemic of Mumps at Camp Wheeler, October, 1917—March, 1918. Arch. Int. Med., September, 1918, xxii, pp. 365-368.

[10] Cribb, A. J.: The Connection between the Parotid Glands and the Generative Organs. Lancet, London, Jan. 30, 1886, 1, p. 227.

[11] Josephson, C. D. [Oöphoritis as a Complication of Epidemic Parotitis.] Upsala Läkareförenings Förhandlingar, 1915, 1916, n. f. xxi, pp. 523-563.

[12] Luche: Eine Parotitis Epidemie. Berliner klin. Wochenschr., No. 40, Oct. 6, 1879, p. 601.

[13] Robinson, W. J.: Prostatic Atrophy and Mumps. Med. Record, New York, 1915, lxxxvii, p. 404.

[14] Steiner, F.: Orchitis parotidea im Säuglingsalter. Wien. med. Blätter, 1896, No. 26, p. 405; No. 27, p. 419.

[15] de Cérenville: Oreillons chez un enfant de quatre ans, complications articulaires, orchite, pneumonie, guérison. Rev. méd. de la Suisse Romande, Geneva, 1887, pp. 711-712.

[16] Fabre, P.: Notes sur trois épidémies d'oreillons, observées à Commentry (1875, 1881, 1887). Gaz. méd. de Paris, Oct. 22, 1887, No. 43, p. 510.

[17] de Massary, E., and Tockmann: Statistique portant sur 243 militaires atteints d'oreillons, soignés à l'Hôpital Andral. Fréquence des orchites et des réactions meningées. Bull et mém de la Soc Méd. de Hôp. de Paris, 1916, 3e ser., xl, p. 1036.

[18] Capitan, L.: Quelques observations sur les oreillons. Bull Acad de Méd., Paris, 1918, 3e ser., lxxx, pp. 197-201.

[19] Brown, F. W.: Ten Cases of Acute Orchitis (Metastatic) Occurring amongst Twenty Consecutive Cases of Mumps, with Remarks. Maritime Med. News, Halifax, May, 1889, 1, p. 76.

[20] Noble, A.: History of Endemic Cynanche Parotidea on Board H. M. S. *Ardent* on its Passage to Montevideo. Edin. Med. and Surg. Jour., July, 1808, p. 304.

[21] Weigert: Epidémie d'oreillons au 13e régiment de chasseurs à cheval, de fevrier à juin, 1915. Lyon médical, 1916, cxxv, pp. 165, 166.

[22] Marmo: Note sur les oreillons. Bul. et mém. Soc. Méd. de la Hôp. de Paris, 1913, 3e ser., xxxv, pp. 1139-1141.

Stolz[63] *op. cit.*, p. 395.

Quoted by Stolz[63], *op. cit.*, p. 404.

[23] Soltmann: Parotitis epidemica. in Eulenburg's Real. Encykl. der ges. Heilkunde, 2nd edit., p. 248.

[24] Grenier: Des oreillons, les orchitis métastatiques, et des atrophies testiculaires consécutives. Lyon méd., 1879, 26, p. 290.

[25] [illegible]: Rapport sur une épidémie mixte d'oreillons et des pneumonies. Arch. de méd. et de pharm. milit., Paris, 1883, ii, [illegible]

[26] Servier: Études sur les oreillons dans l'armée. Recueil de mém. de méd., chir. et de pharm. milit. Paris, 1878, 34, No. 187, p. [illegible]

[27] Martin, A.: Épidémie d'oreillons. Considérations générales sur la prophylaxie et la traitement. Rev. de méd., 1894, p. 201.

[28] Catrin, L.: Oreillons et fièvres éruptives affinités et analogues. Arch. gén. de Méd., October, 1883, pp. 436, 462.

[29] Laveran: Note sur une épidémie d'oreillons au 83e régiment de ligne à Albi. Rec. de mém. méd. chir. et de pharm. milit., 1876, 32, p. 603.

[30] [illegible], A.: Contributions à l'étude des oreillons et de l'orchite metastatique. Rec. de mém. de méd. milit., 1876, p. 478.

[31] Chauvin: Relation d'une épidémie d'oreillons survenue au 111 de ligne. Rec. de mém. de med., chir., et de pharm. milit., 1876, 32, pp. [illegible] 476.

[32] [illegible]: Relation d'une épidémie d'oreillons au 28 Betaillon de Chasseurs à Dax. Rec. de mem. de med. chir. et de pharm. milit. 1878, 34, p. 567.

[33] [illegible]: Épidémie d'oreillons observée à 1er Hussards en 1877. Rec. de mém. de méd. chir. et de pharm. milit., 1878, 34, p. 552.

[34] Gérard: Deux épidémies d'oreillons au 10e Dragoons. Contribution à l'étude de l'atrophie testiculaire consécutive à l'orchite ourlienne. Rec. de mem. de med. chir. et de pharm. milit. 1876, 32, pp. 561-565.

[35] Fournié, H.: Contribution à l'histoire épidémiologique et clinique des oreillons. Rec. de mem. de med. chir. et de pharm. milit. 1881, pp. 509, 517, 519.

[36] Catrin: Quelques observations sur 159 cas d'oreillons. Bull. et mem. de la Soc. Med. des Hôp. de Paris. x, 3, 1893, pp. 624-638.

[37] Antony: Sur la periode de contagion des oreillons. Bull. et mem. de la Soc. Med. des Hôp. de Paris. x, 3, 1893, p. 155.

[38] Rizet: Notes sur une épidemie d'oreillons. Gaz. hebd. de méd., February, 1866, No. 6, pp. 94, 95.

[39] [illegible], L.: Ueber Parotitis und Orchitis epidemica und ihre Komplikationen. Deutsche Militararzte Zeitschrift, 1906, No. 8, pp. 469, 471.

[40] Moser, H., und Arnstein, A.: An der Front angestellte Beobachtungen ueber das endemische Auftreten von Mumps bei älteren Soldaten. Wien. klin. Wochenschr., 1915, xxviii, p. 648.

[41] Edgecombe, W.: Metastatic Affection of the Pancreas in Mumps. Practitioner London, 1908, lxxx, p. 194.

[42] [illegible], A. W.: An Epidemic of Mumps. Indian Med. Gazette, Calcutta, 1914, xlix, p. 331.

[43] Hammersley, A.: Observations on Cyanache Parotidoea as it Occurred in the New York State Prison during the Winters of 1821 and 1822. New York Medical Repository. July, 1822, pp. 416, 417.

[44] [illegible], R. B. H.; Carter, C. F.; Barcus, W. S.; and [illegible], H. L.: Epidemic of Mumps. U. S. Navy Med. Bull., Washington, October, 1919, 13, No. 4, p. 726.

[45] [illegible], H. C.: Ueber Hodenatrophie nach Parotitis epidemica. Virchow's Archiv., Berlin, 1912, 207, p. 188-194.

[46] Ramond, F., et Goubert, G.: A propos de quelques complications peu connues des oreillons. Presse méd., Paris, 1915, xxiii, p. 95.

[47] [illegible], J. H.: Primary Orchitis with Secondary Parotitis. J. A. M. A., March, 1911, p. 742.

[48] [illegible], A.: Mumps: A Critical Review. Quart. Jour. Med., Oxford, 1915, viii, p. [illegible]

[49] [illegible], J.: Zur Parotitis epidemica. Medizinische Klinik, Berlin, Aug. 27, 1917, xiii, p. 916.

[50] [illegible], B.: Primary Testicular Mumps. Jour. A. M. A., [illegible], p. 963.

[51] [illegible], D. L.: Primary Testicular Mumps. Jour. A. M. A., [illegible], p. 1111.

[52] [illegible]: Les oreillons au point de vue épidémiologique et clinique. Un cas de mort par oreillons. Rec. de mém. de méd. chir. et de pharm. milit., Paris, 1875, pp. 551, 551.

[53] [illegible]: L'oreillon unilatéral et son diagnostic. Progrès méd., Paris, 1910, 3e ser., xxvi, p. 177.

[54] Waddelow: Primary Epididymitis in Mumps. Brit. Med. Jour., 1909, I, p. 1480.

[55] [illegible]: Orchite ourlienne sans parotidite. Montpel. méd., 1903, [illegible], p. [illegible]

[56] Sorel: De l'orchite dite métastatique dans les oreillons. Rec. de mém. de méd. chir. et de pharm. milit., 1875, p. 225.

[57] [illegible], M.: Orchitis parotidea ohne Parotitis. Wien. med. Wochenschr., 1901, p. [illegible]

[58] [illegible], A.: Due casi de orchite parotitica senza manifestazione [illegible]. Ann. di med. Nav., Roma, 1913, xix, pp. 31-40.

[59] [illegible], I.: Zwei Fälle von Orchitis parotidea ohne Parotitis. Wien. med. Wochenschr., 1890, [illegible], p. 397.

[60] [illegible], E.: The Relation of Parotitis to Orchitis. New York Med. Jour., 1896, lxiii, p. 680.

[61] Hecker: Parotitis Epidemica. Berlin. klin. Wochenschr., Sept. 20, 1880, No. 38, pp. [illegible]

[62] [illegible], P.: Deux cas d'orchite ourlienne tardive. Arch. de méd. chir. et de pharm. milit., Paris, 1889, xiii, pp. 365-367.

[63] Mitchell, W. S.: A Case of Orchitis Occurring in an Undescended Testis after an Attack of Epidemic Parotitis, and Associated with Acute Delirium. Lancet, London, 1911, I, p. 23.

[64] [illegible], S. J.: A Case of Mumps Followed by Orchitis in a Retained Testicle. Med. Press and Circ., London, 1912, n. s. xciv, p. 164.

[65] Haden, R. L.: The Bacteriology of Mumps: Report of Findings at Camp Lee. Am. Jour. Med. Sci., November, 1919, pp. 698-702.

[66] Wollstein, M.: An Experimental Study of Parotitis (Mumps). Jour. Exp. Med., 1916, xxiiii, pp. 354-374.

[67] Smith, G. C.: Two Cases of Orchitis Due to Mumps, Treated by Operation. BOSTON MEDICAL AND SURGICAL JOURNAL, Sept. 5, 1912, 167, pp. 323-325.

[68] Stolz, A.: Ueber Totalnekrose des Hodens bei Mumps. Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie, Jena, 1901, Vol. vii, pp. 392, 399.

[69] Dieulafoy, G. A.: A Text-book of Medicine. Translated by Collins and Liebmann, New York, 1911, Vol. ii, p. 1708.

[70] Kocher, F.: Die Krankheiten der männilichen Geschlechtsorgane. Stuttgart, 1887, p. 274.

[71] Settekorn: Das Auftreten der Parotitis epidemica unter dem Militär zu Stettin im Winter 1879-80 und im Frühjahr 1880. Deut. Arch. f. klin. Med., Leipzig, 28, 1881, pp. 308-316.

[72] Giovanni, C.: Orecchioni e sterilità nell'uomo. Gazzetta degli Ospedali e delle Cliniche. Milan, xxxiv, 1, April 8, 1913, p. 439.

[73] Laignel-Lavastine et Courbon, P.: Féminisme post-ourlienne (micro-orchidie et gynécomastie consécutives à une orchite double), présentation du malade. Bull. et mém. Soc. Méd. des Hôp. de Paris, July, 1917, 3e ser., xli, 914.

[74] Hess, A. F.: Anti-mumps Inoculation. Transactions New York Acad. Med. Am. Jour. Obst., etc., New York, 1915, lxxii, pp. 183-185; A Protective Therapy of Mumps. Am. Jour. Dis. Chil., Chicago, 1915, x, pp. 99-103.

[75] Joly, P. L.: Épidémie d'oreillons observée au 94e régiment d'infantrie en mai-octobre, 1902; localisations oculaires. Arch. de méd. chir. et de pharm. milit., Paris, 1903, xli, pp. 481-502.

[76] Lowe, T.: Orchitis Complicating Mumps. Jour. Minn. Med. Assn., Minneapolis, 1907, xxvii, p. 13.

[77] Abraham, J. J.: Operative Treatment of the Orchitis Due to Mumps. Lancet, London, Oct. 12, 1912, p. 1036.

Book Review.

Eating to Live Long. By WILLIAM HENRY PORTER, M.D. Chicago: The Reilly and Lee Company.

One of the most important problems with which men and women are confronted is the question of proper nutrition for the development and maintenance of their health, well-being, and physical and mental efficiency; yet there are few matters which are considered with less intelligence and concern by the majority of people. "Eating to Live Long" expounds the principles of right living in regard to eating, and will be of interest both to those who are seeking some means of being restored to health and to those who wish to increase their physical and mental powers and more thoroughly to enjoy living. The author explains food as a medicine and as a poison, depending upon the kinds and combinations of food products and the needs of the individual; his theories, in part radical and not all in complete accord with generally accepted dietetic principles, have been developed as a result of careful study, observation and experiment. Foods, fads, and fallacies to be avoided are discussed, and suggestions are made for securing a balanced diet for normal persons and for correcting pathological conditions due to depraved digestive and metabolic processes. The book explains various physiological aspects of food and the relation of diet to physical and mental efficiency in such a way that any intelligent individual may gain a clear knowledge of the subject and apply it to his own needs.

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VITAMINES.

It has long been known that there were substances in food which are necessary to the development of human well being which are apart from the heat producing portions of caloric value of the food. These unknown substances are termed *vitamines.* Chemists and physiologists do not know exactly what these substances are any more than the physicists can tell what electricity is, but they know what the vitamines can do, or rather what will happen to the person who is deprived of them.

Three forms of vitamines are recognized. The first, the scurvy preventing or anti-scorbutic vitamine, has been recognized for a long time. Scurvy has been a well-known disease especially in the time of the old sailing vessels. When Massachusetts was a sea-going community scurvy was common on shipboard, where it was impossible to provide fresh foods and vegetables for long voyages. It became known that lime juice, and fresh vegetables when possible, prevented scurvy or cured it when it had developed. Later, when the artificial infant feeding was developed it was found that babies fed on carefully prepared, that is sterilized, milk, often did not thrive and sometimes developed hemorrhages resembling old-fashioned scurvy. This condition of the baby, when recognized, was quickly overcome by giving the child orange or other fruit juice. The vitamine preventing scurvy is known as the anti-scorbutic vitamine. It is destroyed in food by heat and oxidization. It can be replaced and scurvy prevented by the administration of fresh orange, lime, or lemon juice; also tomato juice, either freshly prepared or from a newly opened can (for the heat alone does not seem to destroy the valuable vitamine of the tomato). Incidentally, tomatoes have present the two other forms of vitamines and so are specially valuable as a food constituent. This accounts for the great popularity that both fresh and canned tomatoes play today in the diet of the community. Somehow or other the public has instinctively recognized the need of tomatoes to their well being and adopt them as part of their diet. The laboratory has demonstrated scientifically the value of the tomato to everyone as a palatable solution of all of the vitamines necessary for human well being, thus giving its approval to the tomato's popularity as a food constituent.

These have been found in animal foods, especially butter fats. Hence they are found in whole-milk, cream, butter and cream cheeses. Lard alone of the animal fats seems to be deficient in this form of vitamine. The vegetable oils do not appear to carry this very necessary vitamine. It is also found to be present in the yolks of eggs.

The fat soluble vitamine is probably needed especially during the growing period of life. It is needed for the complete development of a perfect body. Although the action of this form of vitamine is less understood than either of the others, there is more evidence of likelihood of serious pathological results arising in everyday life from a shortage of fat soluble vitamines than of the other vitamines.

Like the other two vitamines, the fat soluble vitamine as a chemical entity is unknown. Recently it has been demonstrated that this fat soluble vitamine has been found in certain plants such as spinach, tomatoes, and especially in yellow pigmented vegetables such as carrots, peas, sweet potatoes, yellow corn, etc.

The so-called water soluble vitamines have to do largely from a practical point of view, with the subtle thing called appetite. The loss of appetite is brought back by the presence of the necessary vitamines in the food, not simply by the increased injection of food or food flavors. That is to say, the vitamine must be present before the food can or will be taken and so utilized in the metabolism, or, in other words, used to build up the body tissues.

The water soluble vitamine—the appetite-producing vitamine—has been refined out of our sugar, bolted flour and polished rice. Also from our refined oils and fats. It is not found in ordinary meat or fish. No great harm need result from this careful purification of foods which furnish the greater part of the calories used by the average American household, because other forms of food are generally added in sufficient quantities to supply the need for the necessary vitamines. Most people instinctively eat sufficient vitamine-containing foods because milk, eggs and kidneys and liver are animal foods rich in vitamines, and in addition most of the fruits and vegetables also contain the vitamines.

Fresh milk contains all three varieties of vitamines at present known. The vitamines of the fats are resistant to heat and are constantly present in eggs and milk and the water soluble vitamines are also able to withstand heat. On the other hand, the anti-scorbutic vitamine is destroyed by raising milk slowly to a degree of heat necessary for pasteurization. Such milk rapidly loses its anti-scorbutic vitamines.

It is known from many experiments that no animal can live upon a food which is a mixture of *pure* protein fats and carbohydrate, and even when the necessary inorganic salts are carefully added the animal still cannot flourish. The animal body is adjusted to subsist either upon plant tissues or the tissues of other animals and these contain countless substances other than the pure protein starches, fats and salts.

Three of these active substances have been recognized under the term vitamines: Anti-scorbutic vitamines which prevent scurvy; fat soluble vitamines which favor body growth; water soluble vitamines which have to do with appetite.

The presence of all three vitamines are essential to bodily well being and even though the symptoms of complete vitamine starvation may not be present, nevertheless many vague symptoms of malnutrition often may be due to an insufficiency of vitamines in the diet.

The refined foods for the most part have lost their vitamines, thus our staple foods, such as flour, sugar, rice, macaroni, vegetable fats, lard, and plain meats are much deficient in vitamines.

Fortunately a comparatively small amount of vitamine is all that is necessary to supply the requisite quantity for the body's development and well being. All of the essential vitamines are to be found in fresh milk, eggs, coarse flours, most vegetables and fruits, especially tomatoes, oranges, grape fruit, lettuce, spinach, cabbage, cauliflower, and other leafy vegetables; also peas and beans and grapes and other fruits. There is, therefore, no need of worry about a deficiency of vitamines when foods rich in vitamine are so easy to add to the ordinary dietary.

METHODS OF IMPROVING RURAL SANITATION.

ALTHOUGH the importance to a country of adequate rural sanitation is realized by intelligent and far-sighted persons, it is perhaps less generally appreciated that the problem of promoting measures whereby sanitation can be efficiently managed in rural communities is beset with many difficulties. The subject has been discussed in an article entitled "Methods of Increasing the Efficiency of Rural Sanitation," by T. J. Robinson, published in a recent *Public Health Report*.

The two chief difficulties to be met in trying to raise the standard of rural sanitation seem to be the prevailing ignorance of the country folk in matters of this sort, and the necessity of extracting from their meagre and hard-won earnings enough money with which to carry on the sanitary improvements which may be needed. It is only, therefore, through the education of the people and the gaining of their intelligent and willing coöperation that we may hope to achieve any appreciable and lasting results. Neither legislation nor the efforts of public health officials can bring about any permanent and progressive improvement until the individual and the public mind both are awakened to an intelligent interest in the subject.

Three methods have been suggested for educating the people in rural communities in public health methods: first, to reach through the public school the mind of the growing boy and girl; second, to distribute public-health literature among the adults of the community; and third, to come in personal contact with homes and families by the activities of the so-called "man on the job." Through the public school it would be possible even though our sanitary laws are meagre and sanitation is at present given little attention in many of our rural districts, so to instill into the youthful mind of the school boy and girl the fundamental principles of sanitation that a sense of responsibility to the community in these matters would develop increasingly until it could be exercised in carrying out the duties of citizenship. Among the larger boys and girls, the organization of sanitary clubs, supplied with public-health literature and active in the discussion of improvements at monthly meetings, would facilitate greatly the work of effecting improvements both at school and at home.

A second way of educating the rural community is by the careful distribution of public-health literature among the older members. The results achieved by this method are slow in being realized, and measured by the manner in which the work is conducted. Merchants and business men in general, for instance, are prone to throw such literature unperused into the waste basket, together with the bulk of advertising matter with which they are besieged. The farmer, however, as a rule, has little reading material of any sort, and literature received into his household is often eagerly read both by himself and by his family. It is among this class of people, therefore, that distribution of public-health material proves to be most advantageous.

Probably the most important channel by which the education of rural communities in the principles and practice of sanitation can be accomplished is through the efforts of the "man on the job." Such a man not only must be able to talk with enthusiasm and common sense on the subject of rural sanitation, but he must also be so constituted that he can take a real personal interest in the homes which he visits, realizing the value of his work in terms of human lives and eager beyond a degree of dutiful observation in watching the carrying out of his recommendations. A man of this sort after convincing the people of the necessity of sanitary improvements, will achieve satisfactory results. The importance of sanitary measures has been recognized by the men who have served in the Army and Navy. A more active interest in this subject would be well taken at this time.

PREHISTORIC SURGERY IN NEW MEXICO.

The American Museum of Natural History in New York has called attention to an interesting example of prehistoric surgery discovered during the course of an excavation of a Pueblo ruin in New Mexico. The specimen illustrates the early use of splints and bandages for fracture. This is not the first evidence that attempts were made by prehistoric man to restore injured bones to something of their original condition; fractures of the skull, for instance, are said to have been treated by simple trephining as early as the Stone Age. The skeleton found in New Mexico shows the left forearm with two breaks and extreme displacement. The operative procedure evidently employed shows a remarkable knowledge of cause and effect. The arm was surrounded by at least six wooden splints about seven inches in length, one-half an inch in width, three-sixteenths of an inch in thickness, and fashioned by hand. Although the wrappings are now gone, it is evident from the position of the splints that they originally were held together in some way. As the Pueblian unfortunately died before there had been any union of the ends of the bone, the quality of the surgery can hardly be determined. Whether or not these aboriginees were able to set broken bones is uncertain; the present example shows, however, that even in the Stone Age the Pueblo had sufficient skill to fashion splints and to use them in the treatment of fractures.

MEDICAL NOTES.

Mobile Training Courses in Tuberculosis.—The U. S. Public Health Service, which for some time has been making special efforts to facilitate the diagnosis of tuberculosis and especially to bring about its recognition in its very earliest stages, has recently opened mobile training courses for the purpose in Illinois, Wisconsin, Michigan, and Washington. Similar courses have already been given in Texas, Louisiana, Missouri, Virginia, West Virginia, Maryland, and Pennsylvania.

These courses, which last seven days and are very intensive, are at present open only to physicians attached to the Public Health Service; but after all of these in the various states have completed the course it is hoped that it may be possible to hold similar courses for the benefit of other physicians who may desire to attend.

The instruction is given by recognized experts in the diagnosis of pulmonary tuberculosis, and is supplemented by the showing of a remarkable motion picture, in six reels, which minutely illustrates every phase of the disease.

U. S. Marine Hospital in Chicago.—The U. S. Public Health Service on September 30 opened its Marine Hospital in Chicago as a general clearing house for soldiers and sailors residing in the states of Illinois, Wisconsin and Michigan, who are suffering from nervous and mental diseases. Dr. L. M. Wilbor, surgeon of the Public Health Service, left September 29 for Chicago to take charge.

Any member of the military or naval forces of the United States who needs such attention may come or be sent to the hospital for observation and diagnosis, and will receive, in addition to the services of the group of able Public Health Service surgeons who accompany Dr. Wilbor, the benefit of all the facilities for diagnosis afforded by the vast instrumental resources and expert neuropsychic talent of the great city.

Later, the patient may be returned to his home with or without instructions to report from time to time to the hospital for further observation; or he may be transferred to such other hospital as may seem best suited to his condition. Before returning a patient to his home, its conditions and their probable effect upon him will be carefully considered.

The hospital, which started with 130 beds, has an allowance of $85,000 for remodeling and other purposes. It will serve as clearing house for the eighth district of the Public Health Service.

The Massachusetts Medical Society.

STATED MEETING OF THE COUNCIL.

October 6, 1920.

A stated meeting of the Council was held in the Boston Medical Library, Wednesday, October 6, 1920, at 12 o'clock noon. The President, Dr. Alfred Worcester, was in the chair and the following sixty-three councilors present:

Bristol North,
  F. A. Hubbard, M.N.C.,
Bristol South,
  E. F. Cody.
  W. A. Dolan.
Essex North,
  R. V. Baketel, M.N.C.
  J. F. Burnham,
  G. E. Kurth.
  F. E. Sweetsir.
Essex South,
  J. F. Donaldson.
  H. K. Foster.
  J. F. Jordan.
  A. N. Sargent.
Franklin,
  G. P. Twitchell, M.N.C.
Hampden,
  G. H. Jaynes.
Middlesex North,
  W. B. Jackson.
  J. H. Lambert.
Middlesex South,
  H. T. Baldwin, V.P.
  E. H. Bigelow.
  F. J. Goodridge.
  C. E. Hills.
  H. J. Keaney.
  C. E. Mongan.
  W. D. Ruston.
  E. H. Stevens, M.N.C.
  A. K. Stone, Treas.
  F. R. Stubbs.
  G. L. West.
  Alfred Worcester, Pres.
Norfolk,
  C. E. Allard.
  W. D. Batchelder.
  E. H. Brigham, Libra.
Norfolk (continued).
  A. N. Broughton, M.N.C.
  W. L. Burrage, Sec'y.
  W. A. Griffin.
  Bradford Kent.
  M. V. Pierce.
  Augusta G. Willliams.
  G. W. Winchester, V.P.
Norfolk South,
  Frederic Ellis Jones, Vice-Pres.
Plymouth.
  F. J. Hanley, V.P.
  Gilman Osgood.
  F. G. Wheatley, M.N.C.
Suffolk,
  J. L. Ames.
  S. H. Ayer.
  Loretta J. Cummins.
  Channing Frothingham.
  W. J. Gallivan.
  J. E. Goldthwait.
  W. C. Howe, M.N.C.
  F. L. Jack.
  C. H. Lawrence.
  C. M. Smith.
  J. S. Stone.
  F. H. Williams.
Worcester,
  W. P. Bowers, Ex-P.
  G. E. Emery.
  E. L. Hunt.
  A. G. Hurd.
  C. B. Stevens.
  G. O. Ward.
  F. H. Washburn.
  S. B. Woodward, Ex-P.
Worcester North,
  E. L. Fiske, M.N.C.
  W. F. Sawyer.

The reading of the minutes of the last meeting was omitted by vote and the minutes were accepted as printed and published.

Dr. Charles H. Lawrence presented and explained the following report of the Committee of Arrangements and it was accepted without discussion.

Report of the Committee of Arrangements.

After conference with the President, the Committee of Arrangements wishes to submit to the Council the following tentative plan for the Annual Meeting of 1921:

On account of the meeting of the American Medical Association in Boston, the usual Section meetings will be omitted in 1921, and officers of the Sections will remain in office through the anniversary of 1922.

Tuesday, May 31, there will be meetings of the Supervisors at 4.30 P.M., and the Council at 5 P.M. The Shattuck lecture will be at 8 P.M., all of these meetings being held in John Ware Hall at the Boston Medical Library.

Wednesday, June 1, there will be the Annual Meeting at 9.30 A.M., followed by papers and by the annual discourse at 12 noon. The dinner will be at 1.30 P.M., all the exercises on Wednesday being held at the Copley Plaza Hotel.

The Committee suggests that it will be advantageous to print the dates of the 1921 meeting from time to time in the BOSTON MEDICAL AND SURGICAL JOURNAL, in order that members may become accustomed to thinking of those days as reserved for the anniversary.

The Committee would be glad of any suggestions from the Council in regard to the meeting.

CHARLES H. LAWRENCE, *Chairman.*

Dr. Samuel B. Woodward read the report of the Committee on Membership and Finance as to membership, asking for suggestions or corrections from the Council. There were none and the report was accepted and its recommendations adopted.

REPORT OF THE COMMITTEE ON MEMBERSHIP AND FINANCE, ON MEMBERSHIP.

The Committee on Membership and Finance respectfully recommends:

1. That the following named Fellows be placed on the retired list, in accordance with the provisions of Chapter I, Section 5, of the by-laws:

Lewis Lincoln Bryant, 354 Harvard Street, Cambridge.
Chester Alonzo Dorr, 304 Main Street, South Hingham.
Laura Viola Gustin Mackie, 157 Pleasant Street, Attleborough.
George Harlin Pillsbury, 36 Central Block, Lowell,
William Hillman Sylvester, 6 Clarendon Street, Natick.

2. That the following named Fellows be allowed to resign under the provisions of Chapter I, Section 7, of the by-laws:

Clarence Duane Cudworth, of Winstead, Connecticut, as of Dec. 31, 1919.
Joseph Emmanuel Ingoldsby, 11 McClellan Street, Dorchester, with remission of dues.
Thomas Walter Procter, of Sagamore, with remission of dues.
Edward Hammond Risley, of 57 College Avenue, Waterville, Maine.
Frankwood Earl Williams, 50 Union Square, New York, as of Dec. 31, 1919.

3. That the dues of Frank Robert Sedgley, of West Roxbury, for 1920 be remitted as he is still in the United States service.

4. That George Lincoln Walton, of Boston, retired member, be restored to active membership, in accordance with his written request.

5. That the following named members whose dues are in arrears for three or more years, be deprived of the privileges of membership, as provided for by Chapter I, Section 8, of the by-laws:

Harold Winslow Ayres, Lowell Road, Groton.
Lawrence Francis Boland, Boomer, West Virginia.
Robert Emmett Cleary, 255 Maple Street, Holyoke.
Lawrence Henry Goodwin Collier, 212 South Street, Jamaica Plain.
Nathan Harry Ginsburg, Brockton.
Thomas Francis Grady, 508 Summer Street, Lynn.
Henry Harrison, 153 Huntington Avenue, Boston.
Patrick Eugene Hurley, 160 Chestnut Street, Holyoke.
George Elbert King, 71 Beach Street, Wollaston.
John Brayton Martin, 25 Newhall Street, Lynn.
Ira Humphrey Prouty, 69 Pleasant Street, Marblehead.
Solomon Robinson, 141 Green Street, Worcester.
Edgar Amos Stoneman, 182 State Street, Springfield.

For the Committee on Membership and Finance,
SAMUEL B. WOODWARD, *Chairman.*

The Secretary read the reports of the committees appointed at the last meeting to consider the petitions of the following for restoration to the privileges of fellowship. Each report was acted on separately. All were accepted and their recommendations adopted: J. D. Lucas, J. T. Cahill, A. J. Choate, J. R. Hobbie, Mary P. Dole, F. B. Colby.

DR. S. B. WOODWARD: You remember the vote passed June 8, 1920, authorizing the Committee of Nine to take charge of the BOSTON MEDICAL AND SURGICAL JOURNAL. No communication has been received by the Committee on Membership and Finance from that committee. The present contract with the managers of the BOSTON MEDICAL AND SURGICAL JOURNAL expires January 1. If the Committee of Nine is not prepared to take charge it will be necessary to make some arrangement with the present managers to publish after that date. I understand there is every prospect that some arrangement will be made, but there is no other meeting of the Council before February and if that arrangement is not completed something will have to be done if the JOURNAL is to be continued. It may be necessary to call a special meeting of the Council.

The Committee makes the following recommendation:

REPORT OF COMMITTEE ON MEMBERSHIP AND FINANCE, ON FINANCE.

The Committee on Membership and Finance recommends that the affiliation with the BOSTON MEDICAL AND SURGICAL JOURNAL be continued until such time as the so-called Committee of Nine is prepared to make a report to the Council, at an expense to the Society of . . . per annum for each member in good standing, or, if the contract be abrogated before January 1, 1922, at a rate which shall be proportional to the annual rate, as stated above.

For the Committee on Membership and Finance,
SAMUEL B. WOODWARD, *Chairman.*

You will note that the amount is left blank in the recommendation. The present amount of \$3.00 for each member in good standing is understood to be less than the expense of maintaining the JOURNAL. It was the understanding of the Committee, however, that the chairman should be authorized to fill in whatever amount was demonstrated to him to be essential for the maintenance of the JOURNAL.

Now I am informed by Dr. E. C. Streeter, an owner of the JOURNAL, that the expense for some time has been at the rate of $4.50 instead of $3.00 and I take it that the Committee on Membership and Finance will be perfectly willing to uphold my suggestion that $4.50 be placed in that blank space and that until the Committee is ready to take the JOURNAL, the sum be at the rate of $4.50. Perhaps you would like to hear some statement from Dr. Streeter, and if so, I will ask that he be allowed the privilege of the floor before the vote is taken on this recommendation.

It was voted that Dr. Streeter be asked to take the floor.

DR. E. C. STREETER: I didn't mean to bring the troubles of the JOURNAL before the Council. The Committee of Nine was on the point of acting during the late summer. Even if no transfer is made it will be necessary that we ask for a higher rate from members. The $4.50 rate is based on careful estimates made by Mr. R. D. Pratt, who is publisher of the JOURNAL, and by Dr. R. M. Green, who is business manager as well as editor. This estimate has been carefully examined by the Committee of Nine and I think they will corroborate the statement that the actual prospective costs in 1921 will be at the rate of $4.50 per member from the Society. In other words, it will cost each subscriber approximately $4.50 for his JOURNAL. Costs have gone up, and they are not coming down in the printing world. Within the past month printers have asked for a 16% increase. Paper is costing us from 105% to 110% more than when we made our contract with the Society. Of course, in 1915 the cost was at the rate of $3.00 per member and in the year following we were able to refund $500 to the Society, which showed our estimate was a little high, but we took too much pride in making that refund and we have been straitened ever since. The JOURNAL is run at present without remuneration to the editors and we are dispensing with the services of the business manager and reducing the office force. By strenuous coöperation with the printer, who gives part time, we are saving some money, but we will run at a very distinct loss even with these economies in 1921 unless the rate of the JOURNAL is radically different from what it is at present. The sum of $4.50 is only an estimate, but it looks as though it would hold. Our reduction cost has been at the expense of the appearance and character of the JOURNAL. We have saved on reprints and the cost of producing illustrative matter which is a heavy loss to the JOURNAL, but with additional reimbursement from the Society we could restore the quality of the JOURNAL in part.

THE CHAIR: The question before the Council is on the adoption of the recommendation of the Committee on Membership and Finance which you have heard. It is so voted.

DR. WOODWARD: I would like to make a motion that $4.50 be inserted in the blank space in this recommendation.

Motion put and seconded.

THE CHAIR: It has been moved and seconded that the blank in the recommendation shall have substituted for it $4.50 and then the motion you will be asked to act on is that the affiliation with the BOSTON MEDICAL AND SURGICAL JOURNAL be continued, until such time as the so-called Committee of Nine is prepared to make a report to the Council, at an expense to the Society for each member of $4.50, or if the contract be abrogated before January 1, 1922, at a rate which shall be proportional to the annual rate as stated. Is there anything to be said on this motion?

DR. DOLAN: I would like to hear some remarks from the Committee of Nine.

DR. J. S. STONE: In Dr. Homer Gage's absence today he asked me to report that the Committee were unanimously in favor of taking over the JOURNAL and are ready to do it at any time. There are certain details of management which they were unexpectedly unable to arrange up to the time of this meeting and that is what has caused the delay. They are ready to take over the JOURNAL as soon as the details of continuing it can be arranged.

THE CHAIR: May I ask, Dr. Stone, if in case of those details being arranged before the next meeting of the Council, whether that Committee has any authority to pay out any money. As I understand the situation that Committee of Nine was to confer with the Committee on Finance before this meeting of the Council and it was expected that today we should pass whatever votes were necessary regarding the money. My question is, how between now and the next meeting of the Council does the Committee of Nine propose to enter into any business arrangement?

DR. STONE: As I understand it, that vote authorized the Committee to use any money which had been appropriated for the present affiliation with the JOURNAL for continuing the JOURNAL, and if they needed additional money they should ask for it from the Committee on Finance.

THE CHAIR: That is true, but in the event of money being required will there be enough money remaining from the sum made up by the $3.00 per year from each member, still in the hands of the Treasurer ready to be paid over? It will be paid over of course to the Committee, but is that enough?

DR. STONE: There will be enough to acquire the JOURNAL and I think it can be so arranged that until the meeting in February the JOURNAL can be continued.

Dr. Woodward: The statement was made to me that it was the understanding of this Committee, Dr. Gage, chairman, that that vote authorized them to make contracts to go on and manage the Journal, but if they wanted to spend money for the purchase of the Journal they would go to the Council; otherwise they would go ahead. There was some controversy between the Chairman of the Committee and myself.

Dr. Stone: Was it the question of the purchase of the Journal or the running of it?

Dr. Woodward: The statement made to me was that if it was necessary to expend money to obtain possession of the Journal that then the Committee of Nine must come to the Committee of Finance, but otherwise there was no necessity for conferring with the committee at all. They are distinctly authorized to make a contract.

Dr. Stone: I will say that since the purchase of the Journal has been considered the present owners stand ready to give the Journal over to the Society with its good will for the sum of one dollar.

Dr. Woodward: I understand that.

Dr. Stone: Now I don't know whether we are to go to the Committee on Finance for that one dollar?

Dr. Woodward: Well, you will have to come to the Chairman. I will stand on my rights.

The Chair: Is there any further discussion?

Dr. Woodward: For the benefit of my Committee I would like to have the question settled as to exactly what that vote of the Council implied. How much conference must be had with the Committee on Finance from that Committee? I'd like to know if that Committee has authority to go ahead and manage the Journal and decide how much shall be paid for it by each member without conferring with us?

The Chair: The Secretary will read the minutes.

The three votes of the Council, June 8, 1920, concerning taking over the Journal were read by Dr. Burrage.

Dr. Woodward: I want an interpretation of the votes.

The Chair: Is there any question? It seems plain, Dr. Woodward.

Dr. Woodward: My Committee cannot report at this October meeting on expenditure of money.

Dr. Stone: To clear matters up I would like to move that the three votes read by the Secretary be amended to apply to the February meeting instead of the October meeting.

The Chair: If Dr. Stone will wait until we get this original report out of the way, then his amendment will very likely solve the whole difficulty. Is there anything further to be said on this question?

Dr. Dolan: The reading of the minutes indicates to me that the Committee has power to proceed. I don't see any sense in putting that $4.50 in there. Under the circumstances it seems that they have the power to do as they like as far as the cost is concerned.

Dr. Woodward: The $4.50 has nothing to do with the point. Supposing this proposition falls through and the Committee of Nine only advises the continuation of the present affiliation. Provided the Committee of Nine does not take the Journal over you might not have any Journal after January first.

Dr. Bowers: I am informed by Dr. Streeter that there will be no necessity for any money consideration in the transfer of the Journal except the payment of this $4.50 per annum per member for the time during which the Journal is continued under the present management. That doesn't allow for any extension of certain kinds of illustrations, for instance, or for other developments of the Journal. I am informed by Dr. Streeter that $5.00 from each member, to be available at the present time would cover all possible contingencies under the transfer which might be contemplated, and I would like to inquire if the vote has been taken.

Dr. Worcester: No, it has not; it is open to amendment.

Dr. Bowers: I would like to make an amendment that the sum of $4.50 be changed to $5.00 and that this money be available for the Committee of Nine from this time on.

Dr. Woodward: I would like to speak on the amendment. I would like to have it perfectly clear that there is a contract now in existence between the Journal and the Society which does not expire until January 1st. Dr. Bowers wishes to amend the contract, as I understand it, and put that into the report of this Committee, while the Committee did not consider the present contract at all. They didn't consider that they had anything to do with the present contract.

The Chair: May I ask Dr. Bowers if his amendment was for the period after January 1?

Dr. Bowers: No, to become operative immediately for the advantage of the present owners of the Journal in their management of the Journal and also to be available for the Society in the event of the Committee taking over the Journal.

The Chair: I think I will have to rule that amendment out of order, Dr. Bowers. The report of the Committee on Finance is only for the future calendar year, and it seems to me to amend the price that has been suggested from

$4.50 to $5.00 and at the same time to change its going into effect is beyond the limits of an amendment. It changes the whole character of the report. I feel obliged to rule that that proposition, under the by-laws, would have to be referred to the Committee on Finance for further consideration.

Dr. Bowers: Would it be in order to place an additional amount of money and appropriate that money at the present time for any specific purpose, or can no appropriation be made until after the first of January?

The Chair: I am afraid that the Chair will have to rule against such an amendment. As I understand the rules, it is not within the rights of the Council to appropriate any money without the matter having been considered by the Committee on Finance. The only way to do that at this meeting would be to ask the Committee to withdraw from the meeting now and report later, and at present there is only one member of the Committee here.

Dr. Bowers: This is an emergency.

The Chair: It would be presumptuous for me to rule as chairman on a matter lying between two of the past presidents of the Society.

Dr. Bowers: There is something organically wrong when a committee can control the whole. It is generally considered that a committee is always subject to the dictates of the body creating it.

The Chair: My memory does not go back to the rulings of Dr. Bowers, but it lies very distinct in my memory that Dr. Woodward, during his presidency, ruled that in accordance with Chapter IV, Section 8, of the by-laws, all extraordinary appropriations must first be passed upon by the Committee on Finance. It is quite within the powers of the Council to overrule the Chair. I am still of the opinion that I am obliged to rule the amendment out.

If somebody will appeal from the decision of the Chair, we can have a vote on the matter.

If there is no appeal, the question before us is upon the adoption of the recommendation made by the Committee on Membership and Finance.

Dr. C. Frothingham: I move that it be amended by providing that the cost of the Journal to members be raised from $4.50 to $5.00 to take effect on and after January first.

The Chair: The question is upon the adoption of the amendment that the sum of $5.00 be appropriated to take effect on and after January first for each member in good standing. Is there anything to be said upon this amendment? It is so voted.

The question now comes upon the amended report of the Committee on Membership and Finance that $5.00 be appropriated by the Society for each member in good standing for the Journal during the year 1921 or for such part of that year as the Journal remains outside of the ownership of the Society. Is there anything to be said upon this motion? It is so voted.

Dr. J. S. Stone: I move that an extension of the authorization given to the Committee of Nine at the meeting of the Council last June be voted in order to continue the powers of that Committee until the meeting of the Council in February.

It is so voted.

The Chair nominated as delegates to the Conferences on Medical Education, and on Medical Legislation and Public Health of the American Medical Association in Chicago in March, 1921, Dr. Channing Frothingham and Dr. W. P. Bowers, respectively. So voted.

The Chair nominated as delegates to the annual meeting of the Vermont State Medical Society at Rutland, October, 1920, Dr. Conrad Bell and Dr. Charles T. Porter. So voted.

The Chair: Is there any incidental business?

The Treasurer spoke of the need of overhauling the possessions of the Society now stored in the vault at the Library, last done in 1894, and it was

Voted, That a committee of three be appointed by the President with instructions and authority to examine all papers, documents and manuscripts belonging to the Society now stored in the vault of the Boston Medical Library, and deliver to the Librarian such as they consider should be filed. The committee is authorized to destroy such of the remaining documents, receipted and outlawed bills, routine reports and the like as in their unanimous opinion are not of present or probable prospective value to the Society.

The committee is directed to report its action at the next meeting of the Council.

In accordance with the above vote the President appointed as the said committee: the Secretary, Treasurer and Librarian of the Society.

Report of the Delegation of the Massachusetts Medical Society to the House of Delegates to the American Medical Association in April, 1920.

To the President and Members of the Council of the Massachusetts Medical Society:

Your Society was represented at the New Orleans session of the American Medical Association by a full delegation of five, made up of three regular delegates, Dr. Lund, Dr. Cody and Dr. Stetson, and two alternates, Dr. Osgood and Dr. Burnham, taking the place of Dr. J. B. Blake and Dr. L. F. Woodward, respectively.

In the report of the Secretary of the American Medical Association it is learned that the fellowship of the Association on April 1, 1920, was 47,045, an increase in eleven months of 1,633.

The report of the Auditors submitted with the Trustees' report shows a property account held by the Association of about $282,000. There are other assets including unfinished material, stock on hand, etc., of $189,000, and a reserve fund of $283,000, a total of assets of about $755,000. The liabilities are small, about $15,000. For the year 1919 the income from the Journal was nearly $800,000 and the expenses about $620,000, leaving a net income to the Association from the publication of the Journal of $180,000. The expenses of the Association aside from the expenses of the Journal amounted to nearly $135,000, leaving a net gain to the Association from all sources of about $49,000. The Trustees call attention to the rapidly increasing expense of carrying on the Journal and make the statement that the increased cost of paper and labor alone will increase the cost of production about $57,000 for the present year, and they take occasion to warn the Association of the possible necessity of increasing the subscription price of the Journal.

As usual, the reports of the Council on Health and Public Instruction, under the chairmanship of Dr. Victor Vaughan, and the report of the Council on Medical Education, under the chairmanship of Dr. Arthur D. Bevan, were most complete and instructive, and should be read by every one interested in the progress of medicine. In addition, there was presented to the House of Delegates a report from a special committee appointed to consider the narcotic drug situation, under the chairmanship of Dr. Eliot Harris of New York. This report was most complete and gives most astonishing information regarding the habitual use of narcotic drugs in the United States and the very great difficulty encountered in the attempt to control their use. Unfortunately for our profession, there are not a few in its ranks who are acting in a way to aid the indiscriminate use of narcotic drugs, or to add no credit to the profession to which they claim to belong.

One of the duties of the House of Delegates was to amend and rearrange certain portions of the Constitution and By-Laws of the Association, bringing the whole up to date and making plainer certain portions which were more or less ambiguous.

Your Delegation, in closing this report, would state that they were entirely successful in securing favorable action upon your invitation to the Association to hold its annual session for 1921 in Boston, and in this it was most cheerfully seconded by all of the New England States, as well as by New York and Pennsylvania. In fact, when it became generally known that Boston and Massachusetts were issuing such an invitation, no other meeting place was seriously considered. Every member of the Association from the Atlantic to the Pacific who is making the effort to attend the 1921 meeting, expects to have a good time in Boston.

Respectfully submitted,

H. G. STETSON.

For the Delegation from the Massachusetts Medical Society to the American Medical Association.

The President made the following remarks:

As you all know, the Governor honored the Society by appointing the President of the Massachusetts Medical Society as chairman of the commission to investigate the question of maternity benefits, and you have probably all received a communication from that Commission asking for your advice.

I don't want to complain, but I think it only fair that I should tell you of my disappointment that not one-quarter of the membership of the Massachusetts Medical Society saw fit to answer that request. I cannot help believing and feeling that when the Legislature, confused with all sorts of bills upon the question which largely affects the medical profession, passes a bill authorizing a commission to study the question and report to the next session of the Legislature, and when the Governor appoints as the chairman of that commission the President of the Massachusetts Medical Society and a questionnaire is sent out to the membership of the Society, I cannot help thinking that the President of that Society had the right to expect that at least a quarter of the membership would deign to answer, and I think he might especially have expected that more than a scant third of the Council would have taken the pains to answer.

Perhaps you have noticed that both the Republican platform and the Democratic platform in Massachusetts stand committed in this matter. One of the planks is the declaration that they shall favor whatever report is made by the Commission. They are in favor of legislation for maternity benefits, and perhaps you have noticed that both the candidates for President of the United States have recently and emphatically expressed themselves in favor of legislation in this direction.

Whether or not the recommendations of the Commission will be adopted, I have no means of knowing; nor do I know what those recommendations will be, although that Commission is obliged to report within five weeks from today. I do know this—that the members of that Commission have worked very hard at the problem. I know for one member of the Commission that his summer has been absolutely spoiled. The Commission has arranged and carried out an investigation by trained investigators, first of the maternal mortality in the first half of this year, 1920, and has made a study of the causes of death of 10,000 children who have died under one year of age during the last year. An exhaustive study upon the subject of illegitimacy and the care of illegitimate mothers has been made, together with a study of the very troublesome midwife question. In addition, the Commission has sat week after week listening to the advocates and opponents of state action in this matter.

I have studied the reports of 1600 answers to the questionnaire. Not a single report has been sent in that has been without its influence; not a single answer to the questionnaire. Every answer has been tabulated. Suggestions made, and many have been made that are of value, have been carefully considered by the Commission.

The Commission has not yet been able to come to any conclusion whatsoever. It is a mighty big question. I shall be very glad personally of the advice of any members of the Council who have not yet answered. There is not a single bit of help from any practising physician or Fellow of the Society that would not be very welcome not only to myself, but, I am sure I can say so much, to every member of the Commission.

Another matter I want to speak about. In traveling about the state attending district meetings, I am impressed as I know my predecessors were, by the fact that the Massachusetts Medical Society is an unwieldy body, its different parts knowing very little of each other and unable to pull together in any direction for any purpose whatever. In my opinion the President of the Society cannot possibly attend more than a very few of the district medical societies' meetings. I have not been able to keep anywhere near the rcord made by my predecessors. I cannot seem to get over the ground; I cannot seem to get to the meetings that I would like to get to. I cannot help thinking that the influence of the Society would be very much increased if it were divided into districts; if Berkshire, Franklin and Hampshire, those districts to the west of the Connecticut, would form one section of the Society and meet together once a year, say for their fall meeting, which is the real beginning of the year, and then if the northern and southern part and the central part of the state were divided into perhaps four districts, so that instead of eighteen different district society meetings in the month of October there might be five meetings, each of which would include several districts. In this way there might be a chance of real active consideration of the problems that come before the medical profession in the fall of the year. The President of the Society could easily be at each one of these and so would have the opportunity of meeting during the month of October the whole fellowship of the Society instead of stringing along his visits through the year.

I do not suppose it is the place for the President of the Society to do more than to suggest action which seems desirable in order to make the Society more potent in the Commonwealth. My suggestion is that measures be taken to arrange for district meetings which shall be composed of groups of the present districts. Then another suggestion I want to make (but it is so out of order I want someone besides the Chair to make it), is that all members of the committees of the Council be *ex-officis* members of the Council. The chairmen are already *ex-officis* members of the Council, but I think all the members of the committees should be. These committees are the agents through which the Council is working. They ought to have the inspiration of the Council feeling, and it is not enough that merely the chairman shall be present or someone the chairman delegates. The meeting stands adjourned.

Adjourned at 1.10 P.M.

Walter L. Burrage,
Secretary.

Miscellany.

RESOLUTIONS ON THE DEATH OF DR. PHILIP COOMBS KNAPP.

The following resolutions on the death of Dr. Philip Coombs Knapp have been adopted by the Senior Staff of the Boston City Hospital:

Boston, July 6, 1920.

Philip Coombs Knapp died February 23, 1920, having been connected with the Boston City Hospital for practically all the years of his medical life. He graduated from Harvard College with the class of 1878, from the Harvard Medical School in 1882, and became a House Officer of this Hospital in May of the latter year. Scarcely had he finished his House Officer's service when he received his first appointment on the Hospital Staff and was made Assistant to the Ophthalmic Surgeons in January, 1884. From that day until his death he served the Hospital continuously. His first appointment to the Department for Diseases of the Nervous System came to him in April, 1885, and at the time of his death he was the head of this department. He also served as a member of the Administrative Board of the Hospital, from its inception in 1915 to his death.

Philip Knapp loved his books, was always surrounded by them, and was always happy with them. His memory was unusual and gave him the erudition which was his. His industry, his learning, and his natural aptitude for his profession made him a marked man in his special line of work early in his career.

Philip Knapp was a courteous gentleman and behind his brusque manner and his nearsighted eyes was a great kindliness which he was all too little able to show to many of his acquaintances. He was a brave man. When the last years of his life came, years filled with pain and trouble, he bravely stuck to his work and never quit until actually incapacitated for further effort, a few weeks before the end.

This Hospital will miss him greatly from its staff, for his learning, industry, and natural ability made him a conspicuous figure in his profession, and these qualities, combined with his loyalty to the City Hospital and his devotion to its interests, will make his loss keenly felt.

(Signed)

Paul Thorndike,
President, Senior Staff.
William H. Robey, Jr.,
Secretary, Senior Staff.

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS, AUGUST, 1920.

General Prevalence.

A total of 3,972 cases of communicable diseases was reported for August, 1920, as compared with 6,328 for July and 3,148 for August, 1919.

Anterior Poliomyelitis. Ninety-three cases were reported for the month making a total of 125 for the year. July had 16 cases and June 5. This increase has caused apprehension of an epidemic and plans have been perfected to handle it should it come.

Anthrax. One case was reported. It has also been reported to the Department of Labor and Industry and in order not to duplicate their work and expense in investigating the case arrangement was made to have a copy of their history of the case for our use.

Diphtheria. There was a slight decrease with 428 cases reported as compared with 472 for July. The incidence for August, 1919, was 324 and for August, 1918, 337.

Measles showed a decrease from 2,110 in July to 452 for August.

Lobar Pneumonia. Only 73 cases were reported.

Scarlet Fever has fallen from 715 cases in June and 337 in July to 213 for August.

Pulmonary Tuberculosis. Five hundred and forty-two cases were reported, which is a fair monthly average.

Typhoid Fever. One hundred and seventeen cases for the month. Undue incidence in Fall River and New Bedford.

Whooping Cough remains high in incidence with 803 cases for the month.

RARE DISEASES.

Anthrax was reported from Boston, 1.

Anterior Poliomyelitis was reported from Amesbury, 1; Arlington, 1; Boston, 44; Brookline, 1; Cambridge, 3; Canton, 1; Everett, 4; Fitchburg, 2; Haverhill, 1; Hull, 1; Lawrence, 1; Lowell, 1; Lynn, 1; Malden, 2; Medford, 1; Milton, 1; Needham, 1; Pittsfield, 3; Quincy, 6; Scituate, 1; Somerville, 2; Taunton, 1; Wakefield, 2; Waltham, 2; Westboro, 1; Weymouth, 6; Winthrop, 1; Worcester, 1; total, 93.

Dog-bite requiring anti-rabic treatment was reported from Attleboro, 3; Barnstable, 1; Fall River, 1; Lowell, 1; South Hadley, 1; Taunton, 2; total, 9.

Dysentery was reported from Adams, 1; Cambridge, 1; Fairhaven, 1; Fall River, 2; Boston, 2; Medfield, 13; Montague, 1; Springfield, 1; total, 22.

Epidemic cerebrospinal meningitis was reported from Boston, 2; Chicopee, 1; Framingham, 1; Greenfield, 1; Lawrence, 1; Leominster, 1; Lowell, 1; Quincy, 2; Salem, 1; Weymouth, 1; total, 12.

Hookworm was reported from Beverly, 1.

Malaria was reported from Brockton, 2; Boston, 1; Cambridge, 2; Holyoke, 1; Northbridge, 2; Taunton, 1; total, 9.

Pellagra was reported from Lynn, 1; Swampscott, 1; Waltham, 1; Wrentham, 1; total, 4.

Septic sore throat was reported from Boston, 4; Sutton, 1; Westfield, 1; total, 6

Tetanus was reported from Boston, 1; Holyoke, 1; Lawrence, 1; Northbridge, 1; total, 4.

Trachoma was reported from Boston, 7; Taunton, 1; total, 8.

Correspondence.

A PROLIFIC FAMILY.

Boston, Oct. 19, 1920.

Mr. Editor,—

The following interesting history, which I have every reason to believe is accurate, was given to me by Mrs. P—, recently operated on for a minor surgical trouble.

The patient herself had 14 children, 6 are now living. Her mother had 18 children, 9 boys and 9 girls. One sister had 16 children, and another 23 children. The latter was married at 13 years of age. There were three twin pregnancies. Seven sons were in the recent war, all of whom came through without wounds, save one, who lost an eye three days before the armistice was signed. The family was of Canadian origin. In these days of the usual small family it is certainly rare to find such a record.

Very truly yours,
Wm. Pearce Coues, M.D.

* * *

SOCIETY NOTICES.

New England Branch of the American Urological Association.—The annual meeting of the Society will be held on Tuesday, November 16, 1920, at 8.15 p.m., at the Harvard Club of Boston.

Business meeting:
Report of Nominating Committee.
Election of Officers.
Election of New Members.

CANDIDATES.

Dr. H. A. Chamberlain, 74 Bay State Road, Boston. Endorsed by Dr. Crosbie. Approved by Dr. Chute

Dr. H. H. Crabtree, 205 Beacon Street, Boston. Endorsed by Dr. Smith. Approved by Dr. Barney.

Dr. H. Groeshinsky, 54 Russell Street, New Bedford. Endorsed by Dr. Smith. Approved by Dr. Barney.

Dr. P. N. Pappas, 360 Commonwealth Avenue, Boston. Endorsed by Dr. Crosbie. Approved by Dr. Chute.

Dr. C. N. Peters, 655 Congress Street, Portland. Endorsed by Dr. Mitchell. Approved by Dr. Crosbie.

Dr. A. Riley, 857 Beacon Street, Boston. Endorsed by Dr. Crosbie. Approved by Dr. Chute.

Dr. D. E. Shea, 54 Church Street, Hartford. Endorsed by Dr. Stern. Approved by Dr. Kleiner.

Dr. W. L. Wright, 784 Beacon Street, Boston. Endorsed by Dr. Crosbie. Approved by Dr. Chute.

Program:

1. Presentation of specimens, instruments, etc., and report of cases.
2. Papers.
   A Variation of Mandell's Operation for Hypospadias. Dr. E. Granville Crabtree, Boston.
   An Analysis of Causes of Death on the Genito-urinary Service of the Massachusetts General Hospital during the Past Year.
   Dr. J. Dellinger Barney, Boston.

Members from outside of Boston are requested to let the Secretary know if they expect to be present, so that arrangements may be made for those who wish to dine together at the Harvard Club before the meeting.

Richard F. O'Neil, *President*.
George Gilbert Smith, *Secretary*.
352 Marlborough St.,
Boston, Mass.

Massachusetts Medical Benevolent Society.—The annual meeting will be held at the Boston Medical Library at 5.30 p.m., on Thursday, October 28, 1920.

The Council will meet at the same place at 5.15 p.m. It includes the following officers: President, Vice-President, Treasurer, Secretary and the following Trustees: Drs. J. Bryant, D. Cheever, A. Coolidge, J. B. Blake, J. L. Bremer, A. Thorndike, H. Binney, J. W. Bartol, and E. W. Taylor.

R. M. Green, *Secretary*.

Suffolk District Medical Society.—A stated meeting will be held at the Boston Medical Library, Wednesday, October 27, 1920, at 8.15 p.m.

Business: Election of Auditing and Nominating Committee.

Paper: "*Seminal Vesiculitis, Its Local and Metastatic Manifestations*," by Dr. John H. Cunningham.

Discussion by Drs. William H. Robey, Jr., Robert Soutter and Edmund L. Saunders.

Lantern Slides.

Refreshments after the meeting.

Richard H. Miller, M.D.,
402 Marlborough Street. *Secretary*.

Meetings of the East Boston Medical Society.—Friday, October 29, Dr. Edwin Place, Physician in Chief, Boston City Hospital South Department, on "Some Practical Aspects of the Acute Contagious Diseases." The Doctor has an international reputation and is a master of the subject.

Friday, November 19, Dr. W. H. Waters of the Homeopathic Hospital on an important viewpoint of "The Prognosis of Syphilis."

Friday, December 17, Dr. John T. Bottomley, Surgeon to the Carney Hospital, on "Jaundice." The Doctor has done some special work in Surgery of the Liver during the past year and will tell us of his investigations.

Suffolk District Medical Society.—The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, 8 The Fenway, Thursday, November 4, 1920, at four o'clock.

Candidates should make personal application to the Secretary and present their medical diploma at least one week before the examination.

Richard H. Miller, *Secretary*.
402 Marlborough Street, Boston.

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DEATH NOTICES.

Emil Carl Fraser Ruppel, a Fellow of the Massachusetts Medical Society, died at his home in Lynn, from pneumonia, October 10, 1920, aged 61 years. He was a native of Germany, a graduate of Harvard Medical School in 1892. He is survived by his widow, who was Myra D. Allen, by two sons, who have served in the United States Army, and by a daughter, who was in the reconstruction hospital at Fort McPherson during the war.

Duncan Macdougall, M.D., a Fellow of the Massachusetts Medical Society, died at his home in Haverhill, October 15, 1920, aged 54 years. He was a graduate of the Boston University School of Medicine in 1893.

Dr. Harry Edward Sears of Beverly committed suicide October 20, 1920, by shooting himself through the heart in a private room in his office at 25 Broadway. His act is accounted for by his friends and associates in the medical profession on the ground that his mind had become affected by the continuance of a malady from which he had suffered for several years.

The Boston Medical and Surgical Journal

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INTERPRETATION OF THE WASSERMANN REACTION.*

BY WILLIAM P. BOARDMAN, M.D., BOSTON.

In the interpretation of the Wassermann reaction we must remember that it was only about twelve years ago that this test was introduced into this country and we do not yet know what the nature of the reaction is: whether chemical, physical, biological or a combination of these; and on this account, if for no other reason, we should not try to make it displace all previous knowledge about the diagnosis, prognosis and treatment of syphilis.

Thibierge[1] says, "It is not a definite chemical reaction like the tests for arsenic or sugar, but consists in the testing of properties of substances of unknown composition, existing in unknown and surely very variable quantities, by means of other substances of equally unknown nature, existing in the reaction in also unknown doses, mingled with a lot of substances still less known, in proportions independent of those which take part in the reaction." The only deduction to be made from this definition is that there is as yet very little known about the nature of the reaction.

Craig[2] has shown that the reaction varies considerably from day to day when the blood of the same patient is drawn daily and tested by the same set of reagents and by the same serologist.

In looking for a cause for these variations, attention has been called to the fact that there is great variation in all the reagents which are combined in the test.

The complement (guinea-pig serum) varies greatly, not only in its hemolytic properties, which are generally tested preliminary to the test, but also in its deviability in the presence of antigen and the various sera that are being tested. This deviability is something we cannot test out beforehand, though we do try to eliminate the error by using a mixture of the sera of several guinea pigs, thereby hoping to obtain a fair average.

The antigens used in various laboratories and even in the same laboratory vary enormously in their sensitiveness. Probably the most delicate one is that which we use at the Boston City Hospital and quite generally employed about Boston, namely, an alcoholic extract of beef heart or human heart reinforced with cholesterin. The more delicate the antigen, the more surely are we going to obtain false positives and this is the great objection to this antigen. On the other hand, with a less delicate one, we are surely going to miss a lot of active syphilis, especially in the treated cases. Moreover, if the results are carefully checked up with the clinical side of the cases and the dose of the antigen varied according to the results, I think that the false positives are very rare in cases where the diagnosis of syphilis is in question. But as the antigens are made from different hearts, and sometimes even when they are made from the same heart, their composition and properties vary somewhat and the results of the reaction are accordingly more or less modified. By varying the dose, too, as I have already indicated, we can produce great variations in the results with the same antigen.

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* Read at the Clinical Meeting, Boston City Hospital, Jan. 8, 1920.

In the patient's serum we have a factor that varies greatly under different conditions when fresh and still more when contaminated and kept in a warm room for several hours. Kolmer[3] has shown that a very small amount of alkali and a till more minute amount of acid, either of which might come from improper cleansing of the glassware used to contain the serum or in the test, may cause a positive result or make the blood anticomplementary. A slightly larger amount of either alkali or acid may cause hemolysis of the red corpuscles and give a false negative result.

The sheep's corpuscles used in the test vary greatly in their fragility, but this is always taken into account in the preliminary titration. On the other hand, if care is not taken to have the suspension of uniform strength each time, some variation is sure to come from reading the results especially in the weaker reactions.

In regard to false positive reactions, they have been found in about every conceivable disease, but we must remember that syphilis is a protean disease and that it often gives no signs or symptoms for years at a time, so that we are likely to find positive reactions in all sorts of conditions due to a latent syphilis which, though present, has nothing to do with the present condition of the patient. Among the conditions where false positives have been repeatedly reported, I shall mention only those which are common hereabouts. Infected blood, especially with staphylococcus aureus or albus, may give a false positive as Craig[4] has shown, though the more common finding in these contaminated specimens is an anticomplementary result. Ether narcosis has long been known to give a positive reaction for a few days, mostly, however, only a weakly positive. Icterus has frequently given positive results with some investigators, though I have never seen it except in syphilis, even though I did a fairly large series of icterus cases at one time. Malaria has frequently given positive reactions, but the fact here seems to be that it is only positive for a day or so around the time when the patient is having the chills. Whether measles or scarlatina give a positive reaction is a much mooted point, but the latest information is an article by Laederich[5], who finds positive reactions in both diseases on the fourth or fifth day (without relation to the severity of the symptoms in the particular cases), which appear always by the fifteenth day. With the cholesterin antigens these reactions were strongly positive, while with plain alcoholic extract only weak ones were found. In tuberculosis cases, Craig,[6] in a large series, finds no false positives, whereas Müller,[7] though he finds none in the earlier cases, finds about five per cent. in those with late complications, such as laryngeal involvement. It is interesting to note in Craig's figures, however, that there are more positives in the tubercular patients than in the colored regiments of the army, a fact explained by him as due to the very frequent concomitance of syphilis and tuberculosis. In malignant diseases we do not get false positives except late in the disease, when it does occasionally occur. I have seen it three times in cases where I feel sure there was no syphilis present to account for it and all were very near to the fatal termination of the disease. Septicemia has been found to give positive reactions in rare cases. The same is true of leukemia, especially of the splenic type. Weil[8] has lately found positive reactions in seven out of nine cases of splenomegaly, in which the patients were made worse rather than improved under antisphilitic treatment. False positives have occasionally been reported in pneumonia, especially around the time of the crisis.

So much has been said of false positive reactions that we are liable to forget the fact that there is such a thing as a false negative. These are uncommon, but I have seen them occur in rare cases where the blood is old. It is also very commonly due to the ingestion of only moderate amounts of alcohol during a day or two previous to the taking of the blood. False negatives are not infrequently seen in pregnant women about term or during the puerperium, being positive before and after this time and active syphilis being present at the time.

In syphilis itself, as is well known, the percentage of positives varies greatly with the stage of the disease, being rarely positive before the sixth week after infection or the third week after the appearance of the chancre. The percentage of positives increases from that time until the secondary stage is reached, when it is nearly always positive. However, it is well to bear in mind that some cases do not show a positive until the rash has been present for some time, and in rare cases not at all, so that even here we cannot depend on the Wassermann test absolutely to make the diagnosis for us. I have seen two or three such cases, one of which I followed for some time and he never showed a positive reaction even though he had very definite and active secondaries and later a tertiary throat which reacted only to very intensive treatment. In this connection I might mention that several authors have found weak or negative results in malignant syphilis. In tertiary syphilis the percentage of positive reactions varies around eighty per cent. Here again we must depend on the clinical signs in about twenty per cent. of the cases. In latent cases the percentage varies greatly according to whether the case has had treatment recently or not and according to how old the process is. In congenital cases a positive reaction is often delayed until the outbreak of symptoms, when is is almost invariably positive. In adult congenital cases, however, with active syphilitic lesions, the reaction is positive only in about 75 or 85 per cent., according to Craig. Here again we have to depend on the clinical signs and the more or less well known stigmata of congenital syphilis in a fairly large proportion of cases. In internal syphilis of the heart, aorta, liver, and testicles, the reaction is said to be nearly 100 per cent. positive in the active cases, but I fear that the reason for this high percentage is more correctly due to the fact that the clinician depends on the Wassermann for his diagnosis and calls only those syphilitic which show a positive test. However, in regard to the liver and testicles, I have not seen a case which was proven by antisyphilitic treatment or by autopsy to be syphilis which did not give a positive reaction and always a strong one. In nervous syphilis the reaction on the blood is positive only in about 65 or 70 per cent. of the tabes, more often in meningeal or arterial forms and nearly 100 per cent. in general paresis, though in all these we can obtain more information by examining the spinal fluid in addition.

Now as regards the interpretation of the reaction as a guide to treatment. Most all authorities claim that a negative reaction in the course of treatment in a primary case, where treatment is instituted before the reaction became positive and where it has persistently been negative throughout, is a good sign taken in connection with the absence of clinical symptoms other than the original chancre and is a legitimate argument for shortening the course of treatment somewhat in such a case.

In secondary cases under treatment, we all like to see the reaction become negative as soon as possible, the same as we like to see the clinical manifestations disappear and in the same way we feel that when both respond quickly to treatment, the latter is intensive enough for the time being and if necessary for the general condition of the patient, we can go a little easier on the treatment for the time. If it does not return to positive during the next two or three years, the patient in the meantime shows no recurrent symptoms, possibly we can shorten the treatment of the case a little, especially if the spinal fluid and possibly the luetin reaction show nothing to suggest further activity of the disease. But further than this a negative reaction in the course of a case of secondary syphilis under treatment means practically nothing.

In tertiary cases the reaction varies much less than in the secondary and is usually much harder to turn to a negative, though when it does turn, it generally stays there if the treatment is not interrupted too soon, so that most authors feel that in these cases the Wassermann test is a better guide to treatment than in the secondary, though here again the test has been in existence too short a time to allow us to change our treatment too much on account of it. Then again, in spinal syphilis, the reaction is frequently changed to negative long before the spinal fluid has changed or the symptoms have been cleared up, so that here it is not of much use as a guide to further treatment. In still other cases of tertiary syphilis, especially those of long standing, it is practically impossible to change the reaction to negative. This seems to be especially true in general paresis and in arterial syphilis. Here it would be a great mistake to continue with salvarsan and mercury and cause an incurable irritation of the kidneys or some other permanent damage when we do not know that this positive reaction means active syphilis. Wile[9] has made the suggestion that in some of these cases, the positive reaction corresponds to a positive tuberculin test in old, arrested tuberculosis.

In regard to treatment of cases that show nothing but a positive Wassermann reaction, with no history of syphilis, I feel very strongly that if this reaction is present and strongly positive on several different occasions, and the patient shows no other condition which might cause a positive reaction, the patient should be treated for syphilis and intensively treated. It has been definitely shown that between 30 and 50 per cent. of the cases of late clinical syphilis give no sign or history of previous infection and the medical examiners tell us that syphilis is one of the very frequent causes of sudden death, often where syphilis was never suspected by the patient during life. Now, as these cases have received no previous treatment, it is only logical to suppose that the Wassermann reaction would have been positive in a large proportion of them for some time previous to the appearance of symptoms and by timely treatment during this apparently latent stage and in no other way can this sort of accident be avoided.

A few words might be said in regard to the reading and reporting of the Wassermann reaction. In the army, a one plus is a weak reaction and a two plus is a strongly positive one. In other places we find the one, two, three and four plus signs used. In the Boston City Hospital we use three plus signs for the strongest reaction. All these signs mean merely the degree of hemolysis and the more grades used, the more accurately can the results be compared. I feel that in a treated case the very weakest reaction is an indication for more treatment, whereas for diagnosis, outside of nervous syphilis, a one plus, as we use it, means nothing for the diagnosis of syphilis. A two plus should only be considered as a sign of syphilis when found in connection with pretty strong clinical signs. On the contrary, I feel that a strongly positive reaction (three plus as used at the Boston City Hospital) means syphilis, whether clinical signs are present or not, if it is repeatedly present and there is nothing else in the case which might give a positive, such as advanced tuberculosis or malignant disease in a late stage.

In conclusion, let me remind you that the Wassermann reaction is still in its infancy and its nature is entirely unknown, but it is to be used as an important clinical sign of syphilis and I think that you will find no more variations in it than you will in the findings of several men in the examination of a chest by auscultation and percussion.

REFERENCES.

[1] Thibierge: Presse Médicale, Vol. xxvi, p. 609.
[2] Craig, Charles F.: The Wassermann Test, 1918.
[3] Brown and Kolmer: Am. Jour. of Syph., Vol. iii, p. 8.
[4] Craig: *Loc. cit.*
[5] Laederlich and Bory: Bull. et. Mem. de la Soc. Méd. des Hôp. de Paris, 1919, 3s., Vol. lxiii, p. 504.
[6] Craig: *Loc. cit.*
[7] Müller, Rudolph: Die Serodiagnose der Syphilis, 1915.
[8] Weil: Paris Méd., Vol. ix, p. 237.
[9] Wile and Hasley: Jour. A. M. A., Vol. lxxii, p. 1526.

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THE DIAGNOSIS OF PRIMARY SYPHILIS.

BY HENRY D. LLOYD, M.D., BOSTON.

AFTER infection by the treponema pallidum, the incubation period before the chancre appears varies between three and six weeks, with an average of three and one-half to four. Some men place the outside limits of time as between ten and seventy days. Experimentally the average in apes is twenty-five days. In trying to learn the length of this incubation period it is worth while to remember that while the last sexual exposure may have been only one week before the patient is seen, there may have been an earlier one antedating the nearer exposure by just enough time to make the proper interval.

In regard to the clinical examination of the suspected lesion or lesions, Taylor[1] states there are six varieties of chancre seen clinically: the chancrous erosion, the silvery spot, the dry papule, the umbilicated papule, the purple necrotic nodule and the ecthymatous chancre. As a matter of fact, the primary lesion of syphilis begins as a papule and all the above-noted forms are simply modifications of the papule. The erosion and ulceration which are noted in chancres are due to trauma or infection other than treponemae, or both. The primary papule is quickly eroded; it is usually either round or oval in shape; it is not truly granular but smooth like muscle and closely resembles muscle in color. It may or may not be much indurated; the eroded surface is frequently above, not below, the surface of the normal surrounding tissue, and it has a tendency usually marked to weep serum. It is not tender as a rule. It may be single or multiple although the former is more common. The more usual locations for the penile primary lesion are at or near the frenum or in the balano-preputial furrow. In the latter situation the induration is apt to be most marked and as the prepuce is rolled back the induration can be plainly seen. Also in this situation phimosis is common. In a series of 75 primary lesions in this location observed by Klauder,[2] phimosis was present in 61.3%. In his whole series of 121 chancres, phimosis was present in 13.2%. The same observer states it to be his conviction that a very large majority of all penile lesions occurring on the shaft are luetic.

The surface of the primary lesion may be clean or covered with a gray ecthymatous or cream green membrane. The amount of induration present is variable. Those lesions situated either on the inner or outer surface of the foreskin are the more apt to be indurated, while those occurring on the glans or shaft are less likely to be.

In the female the genital primary lesion has the following distribution according to Fournier[3] in a series of 249 cases.

Greater lips	114
Lesser lips	55
Fourchette	38
Cervix	13
Introitus vaginae	9
Urinary meatus	17
Superior vulvar commissure	2
Vagina	1

The primary lesion as observed on the female genitalia except those on the greater lips is less apt to show marked induration, and is rather more apt to present a surface covered with a dirty exudate than the chancre in the male.

The glands resulting from syphilitic infection are usually very characteristic. They may be small or large, are discreet, not attached to the skin, and not tender. They begin to enlarge usually within a week or ten days, although the period may be as long as three weeks. Frequently the dorsal lymphatic of the penis becomes enlarged, hard and occasionally a hard nodule may develop along its course near the root of the penis.

Clinically it is important to remember that either an ordinary pyogenic infection or one by the Bacillus of Ducrey may disguise the result of treponemal infection; also that the primary may vary in size from a scratch or minute erosion to the size of a walnut. We have observed examples of each.

We now come to a consideration of the newer methods of diagnosis, the examination of the secretion from a suspected lesion by means of the darkfield microscope, and the Wassermann reaction. The difficulty of recovery of the treponema pallidum from any luetic lesion is vastly increased by the use of the applications commonly in use. The commonest of these are silver nitrate and some form of mercury. Therefore no suspected penile lesion (and all lesions should be suspected) should have any application other than normal saline or boric acid in some form until the diagnosis has been made for or against lues. If any application has been made other than some neutral substance it will probably be necessary to wait 24 to 48 hours before it will be possible to recover the pallidum, assuming it is present. Klauder[2] in the series previously quoted obtained a positive darkfield examination in 57.1%.

Some little time ago C. Morton Smith[4] analyzed a series of primary syphilis seen in the South Medical Clinic of the Massachusetts General Hospital, and found that in roughly 96% the darkfield had been positive. The latter figure is, I believe, more nearly what should result from the use of the darkfield microscope. The younger the chancre and the less treatment it has endured, the better the chance of recovering the pallidum, assuming the skill of the examiner is uniform.

What actually are the necessary details of a proper darkfield examination? First, let me say again that one of the most important, if not the most important factor, is an untreated or neutrally treated lesion. The suspected lesion is gently but thoroughly cleansed with ethyl alcohol. The reason for the use of the alcohol lies in its dilatation of the superficial vessels, thus producing a greater flow of serum. The cleaning of the lesion should be thorough enough to remove any contaminating pus cells, but gentle enough so that the microscopic picture will not be obscured by red blood cells. The cleansing accomplished, sufficient gentle pressure is put upon the suspected lesion to produce a flow of serum. If the treponema pallidum is present in this serum, what do we see, looking into the darkfield microscope? Noguchi's[5] description is classic: "Treponema has a slender cylindrical, spirally wound, highly flexible body, which exhibits serpentine, corkscrew-like and sometimes lashing movements. The spiral curves are partly stretched and drawn together with a certain rhythm, so that an actively motile organism resembles a spiral spring which is alternately drawn out and relaxed." The same authority gives the measurements as follows: length, 6-14 microns; width, .2-.25 microns.

As a matter of practical medicine, I believe that in examining genital lesions there is very little chance of confusing the treponema pallidum with the other non-pathogenic spironema normally resident in the genitalia, such as the spironema refringens and the spironema balanitidis. The measurements of these two organisms are respectively 8-12μ x.33μ and 8μ-12μ x.5μ-.75μ, these being shorter and thicker than the pallidum. The treponema pertenuis cannot be distinguished morphologically from the pallidum. Occurring as this does in yaws only, a differential diagnosis should be possible on clinical grounds. In the examination of mouth or throat lesions we need to exercise more care as the treponema microdentium closely resembles the pallidum. Its measurements are 3μ-12μ x.2μ-.25μ (Noguchi[5]). It will, however, be seen that the treponema microdentium is somewhat shorter than the pallidum and it presents fewer curves. The other organisms likely to be encountered in the mouth and throat, such as the spironema buccalis, spironema Vincenti and spironema refringens are all notably longer and thicker than the treponema pallidum. The curves of these three organisms are coarser and they are much more actively motile.

One more practical point. Even though there be a phimosis present, it is usually possible by careful manipulation to secure material for examination by the darkfield, and in a surprisingly large number of these cases the results will be positive. In regard to the Wassermann reaction, I shall consider it only from the clinical side. That is to say, at what time of the primary period does the Wassermann become positive?

Klauder[2] found the following results:

Duration of Chancre in Days	Number of Cases	Positive	Negative	Per Cent. Positive Results
1–10	33	12	21	36%
10–20	17	11	6	64.7%
20–30	20	14	6	70%
30–40	5	5	0	100%
40+	40	40	0	100%

Craig[6] in a series of 600 cases of primary syphilis obtained the following results:

Week after Appearance of Chancre	Total Cases	Positive	Per Cent.	Negative	Per Cent.
1st week	77	27	36.3	50	64.9
2nd week	155	92	59.3	63	40.3
3rd week	158	109	68.9	49	31.0
4th week	167	129	77.2	38	22.7
5th week	43	35	81.3	8	18.6

Craig also speaks of two cases in which the Wassermann test was positive five days after the appearance of the initial lesion. Most observers agree that in the secondary period the Wassermann test properly performed is nearly 100% positive.

The extra-genital chancre deserves a few words. Bulkley[7] in 1894 published a series of 9058 cases collected from the literature. Of these 20% were situated on the lips, 12.5% on the breasts, 5% on the hands. In Bulkley's private practice he noted a series of 113 cases. Fifty of these were on the lips, 15 were on the tonsils and 15 on the fingers, 7 were on the breasts, 6 were on the tongue and the remaining 20 were variously distributed.

H. N. Cole,[8] of Cleveland, in reporting a series of 61 extragenital chancres, states that 43 cases occurred on the lips, 3 on the tonsil, 1 on the tongue, 10 on the hands, 1 on the neck behind the ear, 1 on the left jaw, 1 on the abdomen, and 1 on the breast, a double infection of the nipples. Cole says, "Given any single sore on the body which tends to persist, to increase in size and induration, and to involve nearby lymph glands, one should always keep the chancre in mind."

The differential diagnosis of the extragenital lesion may involve many conditions, but the ones chiefly to be kept in mind are late luetic lesions and carcinoma.

The differential diagnosis in a genital lesion lies between the following conditions: chancre, chancroid, herpes progenitalis, scabies, carcinoma and late luetic lesions. The following table shows the difference:

Chancre	Chancroid	Herpes Progenitalis	Scabies	Carcinoma	Late Luetic Lesion
Incubation 3 to 6 weeks	2 to 5 days	Short	Probably several weeks	No known incubation but slow developing	No incubation period
May be single or multiple, more commonly single	More commonly multiple	Usually multiple	Usually multiple	Single process	Single usually
Subjective symptoms slight or absent	Considerable pain and tenderness	Usually itching and burning	Itching	Pain	Essentially destructive in its nature
Lesion not excavated and surrounded by normal tissue. Surface of lesion smooth raw muscle color. Often indurated	Lesion excavated, edges of ulcer undermined, surface of lesion dirty	Begins as vesicle on inflamed base	Vesicular, papular or pustular. Burrow may be seen, lesions found in other localities	Ulcerated slightly elevated pearly border. May be crusted	Surface is granular and more apt to be infected.
Glands are hard, discrete not tender, not attached to skin	Glands hard and tender, matted together, frequently break down	No glands	No glands	Glands develop very slowly.	Glands not involved
Only auto-inoculable in first 10 to 12 days	Always auto-inoculable	Not auto-inoculable	Is spread by auto-inoculation	Not auto-inoculable	Not auto-inoculable
Treponema pallidum	Bacillus of Ducrey present	Usually no organisms	Acarus scabiei present	No organisms	Wassermann positive in 70% to 80%
Occurs at any age	Occurs at any age	Usually during the years 20 to 40	Usually during the years 20 to 40	Occurs late in life	Possible previous history of syphilis

CONCLUSIONS.

One of the most important factors, if not th most important, in the successful diagnosis o primary syphilis is a lesion which has not been treated either with silver nitrate or some form of mercury.

In a series of 97 consecutive cases a positi diagnosis was made in 96% by means of the darkfield microscope. In a number of these cases, however, repeated examinations were necessary.

The positivity of the Wassermann test, which at the end of ten days averages about 30-35%, increases to practically 100% at the end of the fifth week after the appearance of the chancre.

By employing careful clinical observation and both laboratory methods of examination, repeatedly if necessary, but few cases of primary syphilis should go unrecognized.

REFERENCES.

[1] Taylor, Robert W.: Genito-Urinary and Venereal Diseases, Lea Bros. & Co., 1900, p. 473.

[2] Klauder, Joseph V.: The Early Diagnosis of Syphilis, Jour. A. M. A., 1919, No. 10, p. 693.

[3] Fournier, A. (Quoted by Hazen, Henry H.): Syphilis, C. V. Mosby Co., 1919, p. 72.

[4] Smith, C. Morton: The Treatment of Syphilis, BOSTON MEDICAL AND SURGICAL JOURNAL, 1916, No. 6, p. 198.

[5] Noguchi, Hideyo: Spirochetes, Am. Jour. Syph., 1917, No. 2, p. 261.

[6] Craig, Charles F.: The Wassermann Test, C. V. Mosby Co., 1918, p. 135.

[7] Bulkely, L. D.: Morrow's System of Genito-Urinary Diseases, Syphilology and Dermatology, New York, 1893, No. 2, p. 61.

[8] Cole, H. N.: Report of a Series of Sixty-One Extragenital Chancres, Jour. A. M. A., 1916, No. 25, p. 1805.

LEAD IN THE URINE IN NEURO-CIRCULATORY DISTURBANCES.*

By C. A. McDonald, M.D., and Henry McCusker, M.D., Providence, R. I.

Of late, lead poisoning has been a favorite subject with industrial hygiene investigators and already much work has been done on acute and subacute plumbism in lead workers. Recently some work has been started on chronic lead poisoning, and very recently, experiments have been begun to determine the intake and output of ingested lead. In the cases of acute and subacute lead poisoning reported, and in those found in hospital records, there has been shown a trace of lead in the urine.

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* Read at the Neurological Staff meeting, Massachusetts General Hospital, March, 1920.

Some observers also test for lead in the stools, but stool lead shows ingestion and does not show absorption. The urine examination for lead is more satisfactory because it shows the amount of absorption.

Dr. Chapman of Providence was one of the first to show the amount of lead necessary to cause symptoms and signs. He asserted that from one quarter to one half a milligramme (.00025 to .0005) of lead per liter of urine (estimated by standard methods) is sufficient to cause chronic plumbism, and quoted a number of cases which, he alleged, were due to this amount of lead or more. Accepting his standard as the minimum amount of lead to cause symptoms and signs, we are reporting the following cases:

Case 1. No. 6481, Butler Hospital Record. male; aged 24; born and raised in Woonsocket, R. I. He served with the A. E. F. in France. While in the service he became paralyzed on the right side and became aphasic. He was admitted to Butler Hospital on August 29, 1919. Before the war he lived in Woonsocket and used the city water. He had had several occupations in a mill and had worked about three months in a paint shop as a paint scraper. When examined he was found to have a right hemiplegia with aphasia. In this case there was no evidence serologically of neurosyphilis. Signs and symptoms of brain tumor, cardiac disease, renal disease with hypertension (blood pressure 126-96), arteriosclerosis, or of endocrine disease, were absent. There was nothing in the history of the findings which suggested an infectious cause or a blood condition which might cause a cerebral hemorrhage. The work in the paint shop suggested lead. After a short course of KI the urine examination showed 0.0016 of lead per liter of urine. Examination of home tap water showed 0.0035 lead per liter.

Case 2. No. 2985; male; aged 49; carriage painter by trade. One year ago, after a tooth extraction, he showed a right hemiplegia without aphasia. After this he suffered a depression or so-called "nervous breakdown." Examination showed his teeth in poor condition. Blood and spinal fluid Wassermann were negative. Blood pressure was 130-90. Fundi were negative. Urine examination showed no albumen and no sugar. Gravity adjustable. It also showed 0.004 lead per liter of urine.

Case 3. No. 2992; male; aged 50; carriage painter. Six years ago he was taken sick on the street with vertigo and sub-sternal distress. Since that time he has had many like spells. At the present time he has a phobia for crowded places, street cars, etc. On examination the fundi were negative. Cranial nerves were negative. Teeth were in poor condition. Heart was enlarged. Arch dulness was increased. Blood pressure was 190-90. In the right third interspace there was a diastolic murmur. Brachials were visible, tortuous, and sclerosed. Blood Wassermann negative. Urine examination: Albumen showed as a slightest possible trace. Specific gravity 1010, not fixed. No casts and no sugar. Lead, after KI treatment, showed 0.001 per liter of urine.

Case 4. No. 2762; male; aged 50; no occupation for two years. Complaint—Multiple pains and aches of face and body. Neurological and systemic examinations were negative. Blood Wassermann negative. Teeth showed much pyorrhea. No evidence of focal infection. Urine negative for sugar and albumen. It showed 0.0019 of lead per liter. Much relief came after the removal of the teeth and the substituting of spring water for tap water and the administration of KI by mouth.

Case 5. No. 2543; male; aged 40; storekeeper. Complaint—Epileptic spells at 36. Examination showed him to have a normal personality. Urine was negative for sugar and albumen. Red renal test normal. Blood Wassermann and spinal fluid negative. Spinal fluid showed 18 cells and an increase of globulin. There is no evidence of arteriosclerosis. X-rays of sella turcica showed an elongation of the anterior and posterior clinoid processes and a definite shadow within the sella, thought to be a condensation of the pituitary gland. Urine showed 0.0082 lead per liter. Spring water was substituted for tap water for drinking and cooking, and KI was given by mouth. Much improvement has been noted in general condition and in the number of seizures.

Case 6. No. 2765; male; aged 40; lawyer. Complaint—A migraine of a migraine family. Within the past year he has had two fainting spells. Excellent personality. General examination, neurological and systemic, showed no abnormalities excepting an eye difficulty for which he wore glasses. Examination of urine showed 0.0018 lead per liter. House tap water showed 0.566 p.m.p. His glasses were refitted, tap water was no longer ingested and KI was administered. There have been no headaches and no fainting spells in four months, which is unusual.

Case 7. No. 2532; male; aged 44; master plumber. Complaint—Malaise, headache, indigestion, and vascular hypertension. Blood pressure 200-100. Blood Wassermann negative. Urine negative for sugar and albumen. Red renal test, 65%. Urine showed 0.0019 of lead per liter. While under observation he had an intestinal hemorrhage, probably from duodenal ulcer.

Case 8. No. 2564; female; aged 42; housewife. Patient was first seen on January 17, 1920. Complaint—She complained of palpitation and headache and said that she had been told that she had high blood pressure. Examination showed that she had no organic nervous disease. Blood Wassermann was negative. In the urine there was no albumen and no sugar. The specific gravity was variable. The red renal functional kidney test was 60%. Blood pressure was 180-95. There were no signs of anemia. The urine showed 0.014 of lead per liter. The tap water of her house showed 0.45 p.m.p. Spring water was ordered and tap water denied either for cooking or drinking. Small doses of KI were administered. Three months later palpitation had gone; the blood pressure was 150-90. The lead in the urine was reduced by two-thirds. This woman was impressionable but claimed to be benefited.

Case 9. No. 701; male; aged 60; inventor. Complaints—Loss of color, constipation, general weakness, and left hemiplegia. He showed signs of hemiplegia of mild degree without speech disturbance. His general weakness upset him more than his hemiplegia. Urine analysis showed no albumen and no sugar. Specific gravity 1015. Red renal test was 50%. Blood Wassermann was negative. Blood smear was negative for malaria and signs of anemia. There was no blood in his stools and no ova. He was a man who had had many business cares, had not used alcohol and had used but little tobacco. In a liter of his urine there was found 0.0032 of lead. The tap water in his home showed 0.43 p.m.p. and that of his place of business 0.63 p.m.p.

Case 10. No. 2759; male; aged 54; machinist. Complaint—For one year he has suffered from pain and coldness of his feet. In the winter he has suffered sufficiently to interfere with his vocation. He stands and sits at his work. He lives in the city in a very old house and while at work drinks water from an artesian well. There was no syphilis in his history. He admitted the abuse of alcohol up to a few years ago. He had used much tobacco over a period of many years. There were no signs of organic nervous disease and no signs of cardio-renal disease (blood pressure 140-90). The retinal vessels were sclerosed, the radials were moderately sclerosed, the arch did not percuss enlarged. There was pulsation in his posterior tibials but no pulsation in his right or left dorsalis pedis. His teeth had been extracted. His prostate was not enlarged. On both feet, his first and second toes were pale and cold. The home tap water showed 0.5 of lead p.m.p. Examination of his urine showed 0.012 of lead per liter. By stopping the ingestion of his house water, and by the use of KI, electricity, and massage, he showed improvement.

Case 11. No. 2641; female; aged 47; housewife. Complaints—Acroparaesthesias of her hands and a great feeling of fatigue; cramp like feeling of the muscles; constipation. Examination showed a woman with active deeper reflexes with no evidences of cardiovascular-renal disease. She had some thickening around her small joints—a mild arthritis, perhaps. Blood Wassermann was ++. A spinal fluid examination was refused. A second blood Wassermann was negative. Her teeth were in poor condition. She was looked upon as a case of arthritis and ataxic paraplegia without any evidence as to the cause. The urine showed 0.0026 of lead per liter. The routine treatment previously described was instituted but she was lost sight of.

Case 12. No. 2480½; male; aged 40; printer. Complaint—Paralysis of his arms and wrists, slow in onset. Examination showed patient to have a progressive muscular atrophy involving most of the muscles supplied by the brachial plexus on both sides. The knee jerks were active. There were no Babinski and no ankle clonus. There was some loss of muscular substance of the right gluteal group. There was a slight bladder disturbance. Of the cranial nerves there were no pathological signs excepting a right Horner's syndrome. Competent neurologists looked upon this case as one of progressive muscular atrophy coming on in a printer. Much later a urinary analysis showed 0.026 of lead per liter. Routine examination, however, showed a positive blood Wassermann, and the spinal fluid findings were those of neurosyphilis.

SUMMARY.

These twelve cases represent nervous disorders of many types. Not one of them showed signs of lead poisoning, like the lead-line, anaemia, or stippling. It was only by making a routine urinary examination for lead in doubtful cases that the lead element was discovered. These cases are reported, therefore, to stimulate corroboration or refutation of Chapman's standard, that four-tenths of a milligramme of lead per liter of urine is sufficient to cause symptoms; and secondly, to argue for the consideration of lead as the etiological factor, or one of the etiolgical factors, in obscure cases presenting neurological signs and symptoms

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A REVIEW OF THE RECENT WORK ON AMOEBIC DYSENTERY.

By William Allan, M.D., Charlotte, N. C.

During the period of the war considerable advance has been made in our knowledge of several of the factors of the amoebic infection problem, particularly by our British allies. In their campaigns in the Eastern Mediterranean area they were promptly confronted with serious casualty rates from dysentery, and as the Gallipoli dysentery was reported as largely amoebic by early observers, they met this situation by intensively training a number of protozoölogists and concentrating their chronic dysenteries in special hospitals.

This war work has increased materially the definite statistical data of the incidence of amoebic infections among different races and in different parts of the world. In examining about 31,000 British troops returned from the Near East, the majority of whom had had dysentery or other bowel disorders, 9.8% were found infected with Entamoeba histolytica.[1] Of nearly 7,000 troops and civilians without any history of bowel trouble, examined in the Eastern Mediterranean area, or invalided from that region, 10.5% were found infected. In 5,000 persons with a record of intestinal disorders examined in France and England, mostly troops from the Western Front, 8.9% were found infected, while in 3,761 individuals without bowel troubles, 5.8% were infected. Kofoid found 10.8% of 1,200 American soldiers returning from France infected. The great majority of these individuals received a single examination, which Dobell has shown brings to light less than one-half of histolytica infections, so that the figures given above are something less than half the true incidence of this protozoal infection. Such a brief summary may give some idea of the magnitude of the problem; of the approximately 50,000 persons examined, both in Western Europe and the Near East, both healthy and dysenteric, between 13% and 25% were infected with Entamoeba histolytica.

Medical men have been handicapped by a lack of zoölogical knowledge of the intestinal amoebae, but have had to go blunderingly ahead because of the slowness of trained protozoölogists to lead the way out of this wilderness. Schaudinn in 1903 adopted the placing of the intestinal amoebae in a new genus, Entamoebae, by Cassigrandi and Barbagallo, and emphasized anew the distinction between pathogenic and non-pathogenic species. During the next ten years many new species were described by many observers, the Entamoeba tetragena of Viereck being the most important. Walker's[2] work in Manila in 1911 finally led to the abandonment of Schaudinn's erroneus description of Entamoeba histolytica and to the boiling down of the Entamoebae of man into two species, Entamoeba histolytica, pathogenic, and Entamoeba coli, non-pathogenic. As the former has four nucleated cysts and the latter eight nucleated cysts, all seemed plain sailing for the easy differentiating of species. But in 1917 Wenyon and O'Connor[3] described a non-pathogenic Entamoeba of man, with four nucleated cysts, calling it Entamoeba nana. Their work has been accepted, confirmed and extended by other British workers, and by our own protozoölogist, Kofoid, who has shown[4] that this new species is fairly common. Dobell[5] in his recent excellent monograph on the zoological status of the amoebae living in man has created a new genus for this amoeba, Endolimax, calling the organism Endolimax nana. So that we now have to deal with and differentiate three species of parasitic amoeba, namely, Entamoeba histolytica, pathogenic, with four nucleated cysts, Entamoeba coli, non-pathogenic, with eight-nucleated cysts, and Endolimax nana, non-pathogenic with four nucleated cysts.

The earlier work on differentiating the intestinal amoebae consisted largely in staining active forms and then interpreting the amount and arrangement of the nuclear chromatin. Needless to say this could never become a popular method. Due to the work of Walker in 1911[2] and of Mathis in 1913[6] and of many others, we have been led to turn from the study of trophozoites to the study of cysts. This has been rendered very much easier by the introduction of iodine, or such iodine stains as Donaldson's,[7] with which the specimen of stool is rubbed up in order to differentiate the cysts. Iodine makes cysts much more readily recognizable and brings out the nuclei sharply.

Dysenterics unsuccessfully treated become convalescent carriers, discharging cysts in their stools intermittently for an indefinite length of time. Besides these, there are many so-called healthy carriers, who present neither past history nor clinical evidence of dysentery. When possible, these cyst carriers should be given the same course of treatment that acute or chronic cases of dysentery receive, for besides being a source of infection to others, some will eventually develop dysentery, and some liver abscess.

Since Rogers' introduction of the use of emetine in 1912, one advance in the treatment of this infection has been made, namely, the introduction of emetine bismuthous iodide. This preparation was first suggested by Dumez,[8] in Manila in 1915. A year later the British began using it and seem to have demonstrated its value. Emetine bismuthous iodide, containing about 29% emetine, is given by mouth in salol or keratin coated tablets, one grain two or three times a day. It may be used alone or combined with emetine injections; at present there is a tendency to use emetine injections for 10 to 12 days followed by two or three grains of the double iodide for 12 days in acute cases, and to give 12 to 14-day courses of the iodide alone in treating carriers. Lillie and Shepheard[9] cleared up 62 out of 104 carriers with 12-day courses of three grains of emetine bismuth iodide alone. Jepps and Meakins[10] cleared up 20 out of 24 carriers, and McKinnon cleared up 70 out of 131 carriers. Savage and Young cured 14 out of 17 carriers and eight out of 16 acute cases with the iodide alone, two to three grains for 12 days. Gunn and Savage,[11] using emetine injections for 12 days, followed by emetine bismuthous iodid for 14 days, treated 120 acute cases; 82 were discharged as cured, 46 being kept under observation for more than 30 days, 36 for less than 30 days; 38 of their acute cases relapsed. They treated 190 carriers in the same way; 171 were discharged as cured, 106 after more than 30 days, 65 after less than 30 days; 29 of their carriers relapsed. Turner and Taylor[12] in 366 carriers had 67 to clear up without treatment; 215 were cleared of cysts with emetine bismuthous iodid, and 84 failed to clear up.

These results from British military hospitals seem very encouraging, but their men could be held for observation for only four or five weeks. In spite of Dobell's findings that 90% of relapses in treated carriers take place within three weeks,[13] McAdam has shown that many so-called carriers relapse later on, and Walker long ago found the incubation period of experimental Entamoebic infection running as high as 90 days. In civil life, it would be better to follow cases for a year before pronouncing a cure. In the few acute cases the writer has had the opportunity of treating during the past year, emetine bismuthous iodid has cleared out the cysts, temporarily at least, after emetine injections had transformed the dysenteric into the carrier state. This new therapeutic agent will doubtless prove very useful, but an estimate of its exact value must await a much more prolonged observation of its effects.

The most important addition to our knowledge of the treatment of amoebic dysentery has been presented by Dale and Dobell,[14] who undertook to work out carefully the strength of emetine solutions which would be lethal to Entamoebae in dysenteric stools. They found that when emetine in solution was applied directly to the Entamoebae, it was not particularly toxic, while it is a well known fact that emetine injections in human amoebic dysentery have a specific amoebacidal effect even in very small doses. They also found that injections of emetine had absolutely no effect on clinical amoebic dysentery in the cat. Therefore, as emetine seems to be without effect both directly and through the medium of the cat, but is very effective through the medium of man, it is pointed out that the specific action in clinical human entamoebic dysentery must be because of its action on the host and not on the parasite.

REFERENCES.

[1] The figures in this paragraph were obtained by tabulating the reports of Archibald, R. G., Hadfield, G., Logan, W., and Campbell, W.: Jour. R. A. M. C., Vol. xxvi, No. 6, p. 695, 1916; Arkwright, J.. A., York, W., Priestly, O. H., and Gilmore, W.: Brit Med. Jour., p' 683, May 13, 1916; Aubert, P.: Bull. Soc. Path. Exotique, Vol. x, No. 7, p. 611, 1917; Barratt, J. O. W.: Brit. Med. Jour., p. 617, Nov. 4, 1916; Bayliss, A. A.: Lancet, p. 54, Jan. 11, 1919; Bayma, T.: Ann. Paulist. Med. et Cirurg., Vol. vii, No. 5, p. 97, 1916; Böney, T. K., Orossman, L. G., and Benlanger, C. L.: Jour. R. A. M. C., Vol. xxx, No. 4, p. 409, 1918; Christie, W. L.: Brit. Med. Jour., p. 89, July 17, 1915; Cowan, J. M., and Miller, H.: Jour. R. A. M. C., Vol. xxi, Nos. 3 and 4, 1918; Cragg, F. W., Ind. Jour. Med. Research, Vol. v, No. 2, p. 301, 1917; Cutler, D. W., and Williamson, R.: Jour. R. A. M. O., Vol. xxxiii, No. 3. p. 262, 1919; Dobell, C.: Special Report Series No. 4, Med. Research Com., 1917; Dobell, C., Gettings, H. S., Jepps, M. W., Stephens, J. B.: Special Report S. No. 15, 1918; Dobell, C.: Brit Med. Jour., Nov. 4, 1916; Fontham, H. B.: Lancet, p. 1165, June 10, 1916; Ficker, M.: Ann. Paulist. Med. et Cirurg., 5-2-335; Findley, G. M.: Lancet, p. 755, May 19, 1917; Fischer, W: China Med. Jour., Vol xxxii, No. 1, p. 13, 1918; Fischer, W: Deut. Arch. f. klin. Med., 118-2-129, 1915; Fin, P. C.: Abs. in Trop. Dis. Bull., Vol. xii, No. 5, p. 287, 1918; Gunn, J. W. C., Savage, R. E.: Jour. R. A. M. C., Vol. xxxiii, No. 5, p. 418, 1919; Hall, I. W., Adam, D. C., Savage, R. E.: Brit. Med. Jour., p. 174, Aug. 5, 1916; Hughes, T. A.: Ind. Med. Gazette, 54-4-139, 1919; Jepps, M. W., Meakins, J. C.: Jour. R. A. M. O., Vol. xxix, No. 6, p. 704, 1917; Jepps, M. W.: Brit. Med. Jour., p. 616, Nov. 4, 1916; Kofoid, O. A., Kornhauser, S. I., Sweezy. Olive: Arch. Int. Med., Vol. xxiv, No. 1, p. 35, 1919; Leboeuf, A., Brown, P.: Bull. et Mém. Soc. Méd. des Hôp. de Paris, 32-27-1602, 1916; McAdam, W.: Lancet, p. 15, Jan. 5, 1918; McKinnon, D. L.: Lancet, p. 386, Sept. 21, 1918; Martin, C. J., Kellaway, Williams, F. E.: Jour. R. A. M. C., Vol. xxx, No. 1, p. 101, 1918; Matthews, J. R., Smith, A. M.: Ann. Trop. Med. Parasitol., Vol. xiii, No. 1, p. 83, 1919; Rangel, Prestana B.: As. Paulist. Med. et Cirurg., 8-5-101, 1917; Ravaut, P., Krolunitski, G.: Presse Médicale, Vol. xxiv, No. 37, p. 289, 1916; Rocke, W.: Lancet, p. 297, Feb. 24, 1917; Sanford, A. H.: Jour. A. M. A., Vol. lxvii, No. 26, p. 1923, 1916; Savage, R. E., Young. J. R.: Jour. R. A. M. C., Vol. xxix, No. 3, 1917; Tribondeau, Fichet: Bull. Acad. Méd., 75-11-317, 1916; Turner, O. P., and Taylor, N.: Jour. R. A. M. O., Vol. xxxiii, No. 3, p. 245, 1919; Wenyon and O'Connor: "Human Intestinal Protozoa in the Near East."; Wenyon, C. M.: Jour. R. A. M. C., Vol. xxvi, No. 4, p. 445, 1916; Woodcock, H. M.: Jour. R. A. M. C., Vol. xxix, No. 3, p. 290, 1917; Woodcock, H. M.: Jour. R. A. M. C., Vol. xxxii, No. 3, p. 231, 1919.

[2] Walker, E. L.: Phil. Jour. Sc., Vol. vi, p. 259, 1911.

[3] Wenyon, C. M., and O'Connor, F. W.: "Human Intestinal Protozoa in the Near East," 1917.
[4] Kofoid, C. A., Kornhauser, S. I., and Plate, J. F.: Jour. A. M. A., Vol. lxxii, p. 1721, 1919.
[5] Dobell, C.: "The Amoebae Living in Man," 1919.
[6] Mathis, C.: Bull. de la Soc. Méd. Chirurgie de l'Indo-Chine, June 8, Sept. 14, Nov. 9, 1913, and April 19, 1914.
[7] Donaldson, R.: Lancet, Vol. ii, p. 571, 1917.
[8] Du Mez, A. G.: Phil. Jour. Sc., Vol. x, Sect. B, p. 78, 1915.
[9] Lillie, D. G., and Shepheard, S.: Jour. R. A. M. C., Vol. xxix, No. 6, p. 709, 1917.
[10] Jepps, M. W., and Meakins, J. C.: Brit. Med. Jour., p. 645, Nov. 17, 1917.
[11] Gunn, J. W. C., and Savage, R. E.: Jour. R. A. M. C., Vol. xxxiii, No. 5, p. 418, 1919.
[12] [illegible] P., and Porter, A.: Jour. R. A. M. C., Vol. xxxiii, No. 3, p. 245, 1919.
[13] Dobell, C.: Special Report Series No. 4, p. 51, 1917.
[14] Dale, H. H., and Dobell, C.: Jour. Pharm. and Exper. Ther., Vol. x, No. 6, p. 399, 1917.

THE AFTER-TREATMENT OF A DISLOCATED ELBOW.

By Ernest T. Saeger, M.D., Boston.

The purpose of this paper is to emphasize the importance of the after-treatment of a posterior dislocation of the elbow—the usual variety of dislocation in the elbow region. Several surgeons have called attention to the fact that myositis ossificans traumatica very often occurs in the muscles near the elbow following an injury in that region. This condition appears very frequently following a fracture in the elbow region, but it is also not rare after a simple dislocation. Lehmann has reported 37 cases of post-traumatic ossification at the elbow joint occurring at his clinic during a period of eight years. The ossification followed posterior dislocation in 19 of these cases.

Various explanations have been made as to the origin of intramuscular masses of bone after trauma. One theory is that osteomata may arise from periosteum. The affected muscle is crushed and the adjacent area of periosteum is injured. Cells of the injured periosteum proliferate, escape into the pulpy area of muscle and there develop. A mass of bone is formed which may have only a loose connection with the periosteum or may become entirely detached from it. Or a muscle in action receives a blow. Some of the fibres tearing loose from their origin and retracting into the mass of muscle still connected with the bone carry with them particles of periosteum. These particles of periosteum grow in the new environment, are true bone grafts, and can form intramuscular osteomata unconnected with, though originating from the periosteum. Or, as a result of one trauma a regular flap of periosteum is detached from the bone in whole or in part and being drawn into the belly of a muscle, develops there, forming an osteoma. It is said that a bone cyst may form thus.

The Cohnheim theory of the origin of tumors states that osteomata are primarily muscular, and when connected with bone this connection is entirely secondary. There have been present in muscle aberrant masses of embryonic material originally provided for the development of the normal bone, but unused; they have lain in the muscle until stimulated to growth by trauma.

Ziegler assumes that in subjects of myositis ossificans, whether traumatic or progressive, there is a congenital diathesis of the connective tissue of the muscles, fascia, tendons, and ligaments in that they become endowed with powers normally belonging to periosteum alone.

Various observers differ as to whether the process is a tumor or inflammation. Grawitz and Salmon investigated and pronounced the disease inflammatory. Clinically, they found the temperature often elevated in the early stages and they believed that the acuteness, the amount of swelling, and the tenderness of the affected muscles all indicated inflammation. Microscopically, there was early cloudiness, later degeneration of the muscle fibres and small cell infiltration of the connective tissues around the altered parenchyma. The bloodvessels in the neighborhood were enlarged. From the study of one of his cases, Binnie believes that one is forced to admit the probability of the bone tumor being the result of proliferation and metamorphosis of intramuscular connective tissue.

The elbow joint has a great tendency to produce irregular masses of callus not only connected with its bony points, but also in the surrounding muscle. As the formation of callus beneath stripped periosteum or in the muscle may hinder the development of functional activity, the after-treatment has much to do with functional return. The brachialis anticus and the triceps are the usual muscles involved in a post-traumatic myositis ossificans. Of the 19 cases of posterior dislocation reported by Lehmann, all showed new bone formation in the two muscles mentioned, part of it being of intramuscular formation.

Report of a case of posterior dislocation of the elbow:

Mrs. H—— came to the Out-Patient Department of the Peter Bent Brigham Hospital on April 5, 1918. She had fallen out of bed the night before and had injured her right elbow. Examination showed extreme swelling and discoloration in the region of the right elbow joint. The arm was held in nearly complete extension by the patient, as this seemed the most comfortable position. There was intense pain whenever attempt was made to flex the forearm. Extension of the fingers caused severe pain also. No evidence of fracture was found on physical examination, and the injury seemed to be a simple posterior dislocation of the elbow. This diagnosis was confirmed by x-ray examination.

The patient was given an anesthetic and the reduction made. The anesthetic was gas-oxygen with enough ether to obtain complete muscular relaxation. The reduction was easily performed as follows: the forearm was slowly extended and then slightly hyperextended. While an assistant held the patient's arm in this position, the operator grasped the lower end of the upper arm with both hands and pushed on the olecranon process with both thumbs while the assistant slowly flexed the patient's forearm. This method easily disengaged the coronoid process from the olecranon fossa, and caused it to pass on under the trochlea without tearing any more ligaments. The arm was then put up at right angles for a few days until the swelling had disappeared. It was then flexed to an angle of about 60 degrees and immobilized for a period of three weeks following reduction. The arm was now placed in a sling for a week and daily periods of baking, massage, and passive motion were instituted. Three weeks later, or six weeks after the reduction, there was still marked limitation of extension. The forearm could be extended only 10 degrees beyond a right angle. X-ray plates were made and showed no evidence of myositis ossificans, or bony callus around the joint. Hence the limitation of motion seemed due entirely to joint adhesions. The patient was again given a general anesthetic until there was muscular relaxation, and the adhesions were broken up without difficulty. Then followed another period of massage, baking, and gradual passive and active motion. Six weeks after the last anesthesia was administered the patient was discharged. There was no limitation of motion at the elbow joint and no deformity.

It would therefore appear that complete rest for a period of at least three weeks after reduction of dislocation has the greatest influence in reducing this tendency to ossification. We also know that these masses slowly absorb and disappear if irritation is not continued. Consequently a long immobilization of the arm in a flexed position will often cause their disappearance. Operative removal should be the last step in treatment if conservative methods have failed. The after-treatment which seems safest consists therefore in retention of the forearm in a position of 60 degrees flexion for about three weeks or until passive motion in the direction of extension is painless. Painlessness is an indication of complete healing of the ruptured capsule. After three weeks the arm is massaged and given light passive movements. It is kept in a sling for another week. Each day active movements short of pain production are encouraged, and function gradually returns. Due to the ruptured capsule, the period of immobilization has almost certainly resulted in the formation of firm joint adhesions. Possibly in some cases these adhesions can be broken up by active or passive motion, but it is more likely that another anesthetic will have to be given in order to remove the cause of any limitation of motion. This part of the after-treatment should be performed when there is no longer any progress under treatment by massage and passive motion.

CONCLUSIONS.

1. The elbow joint has a greater tendency than other joints to the formation of ossification in the neighboring muscles following trauma.
2. The use of early passive motion and massage following reduction of a dislocated elbow is contra-indicated.
3. There should be absolute rest of the arm for three weeks in order to make the development of myositis ossificans traumatica less likely.
4. The origin of new bone formation may be from osteoblastic cells which have wandered from the torn periosteum and proliferated, or it may be a metaplasia of the connective tissue of the capsule or intermuscular septa.
5. Unfortunately immobilization will almost certainly result in the formation of firm joint adhesions which will have to be broken up under general anesthesia.

Clinical Department.

THE USE OF THE THERMOMETER IN MENTAL DISEASES.

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Not long ago the thermometer was considered of no value in mental diseases. There was a tradition that the insane never got fevers. At present there is recognition of the importance of temperature records among the insane, but not enough. The general practitioner, if he meets the mental symptoms of the case first, seems to forget all about his thermometer and stethoscope. Even on the chronic wards of the hospitals for the insane, I suspect that more fevers would be shown if records were made more as a routine, and also if it did not take so much time and trouble to get records upon disturbed and resistive patients. On an admission ward, however, fevers occur frequently, and here and in the practice of the psychiatrist are to be found the opportunities for the further study of the relation of increased bodily heat to mental diseases.

From January 1, 1916, to the first week in July, seventy-one women were admitted to the Department for Mental and Nervous Diseases of the Pennsylvania Hospital. Fevers slight or severe, transitory or chronic, occurred in over 50 per cent., a surprising result for consecutive cases. Undoubtedly selection has had some part in determining this percentage—physicians perhaps tending to send deliria of certain grades to us, and the hospital making certain discriminations in favor of acute cases. The diagnoses, however, are sufficiently varied and show that fever has occurred in imbecility, epilepsy, arteriosclerotic dementia, general paralysis, dementia praecox and manic depressive psychoses. Of 19 cases of manic depressive insanity, 13 had fever and six did not. Of 19 cases of dementia praecox eight had fever and 11 did not, this being the only disease in which normal temperatures were found more often than the reverse.

This paper is an examination of the temperature charts found in these consecutive cases, singly and in groups. We have first a group of several initial fevers of from two to three degrees, subsiding to normal in from one to eight days. This group is shown in composite on Chart 1. We can see that such initial temperatures have little meaning for the mental disease. A drop to normal coincides with the coming of the patient under control, after the family, with insufficient advice and help, has allowed the patient to become constipated, or superficially infected from dirty teeth, nails or skin. Noticing the fever, however, is of value in emphasizing the need of immediate treatment; while such conditions undoubtedly mean little if treated they may mean much if neglected.

It has been our custom after getting the temperature to the normal line for a few days to discontinue the chart to the time when clinical indications arise for renewing it. In certain cases, however, we have picked up fevers by taking records without such clinical indications. Such a record as Chart 2 shows what happens sometimes and suggests that the routine use of the thermometer should continue at least through the first menstrual period. The use of the full monthly page of the average temperature chart, even with continued normal findings, seems justified as a routine measure.

A group of three long continued temperatures in general paralysis cases in shown in Chart 3.

Illustrations of fever in all sorts and conditions of defect and disease are supplied freely in the remaining cases; in an imbecile, for instance, at the menstrual period, and in five cases of gross cerebral damage (Chart 4).

I turn now to a group of seven cases, the first of which is undoubtedly to be classified as an infective psychosis, and the last as a true manic state. It is the sequence of these cases that I wish to emphasize, with special reference to the physical factors at the onset and the gradual changes in intensity and number of certain, often recurring, symptoms.

A short account of each of these cases is needed and will be found below, while the fever line is given in Chart 5 A and B with the appropriate number. The following characteristics for the whole group may be mentioned: This was the first attack for all cases, except the last; the ages at onset ranged from 26 to 49; the Wassermann reaction was negative for all seven cases, although the fourth case had had syphilis three years ago, followed by thorough treatment; none of the cases used alcohol.

Case 1. First attack at 33. Measles at 30, with gradual loss of weight since. For a month indefinite symptoms of pelvic inflammation. While in a general hospital, where she was sent in order to have a diagnosis made between a local inflammatory process and typhoid fever, she suddenly became desperate, tried to throw herself out of the window, had vague delusions of persecution. On admission disoriented, hallucinated, apprehensive, incessant, incoherent talk. Tube fed. Catheterized. In the second month pustules on the legs. Recovery in eight weeks. (Nine weeks total illness.)

Case 2. First attack at 32. Miscarriage five months ago. Purulent vaginitis on admission. At home, in a period of seven weeks, short depression followed by short excitement and then confusion. On admission disoriented, apprehensive, continual incoherent talk. Tube fed. Catheterized. In the second month a boil on the buttocks. Recovery in seven weeks. (Four months.)

Case 3. First attack at 49. For past three years gradual increasing fatigue, headache and backache. Pus and albumin in the urine on admission. Three weeks ago made remarks that could not be understood. Two weeks ago still in general hospital. She became grandiose, hallucinated, talked incessantly. On admission partly oriented, exhilarated, distractible, with spasmodic intermittent motor activity. On recovery, it was shown that she had no memory for the first ten days at the hospital. Recovery in three weeks. (Five weeks.)

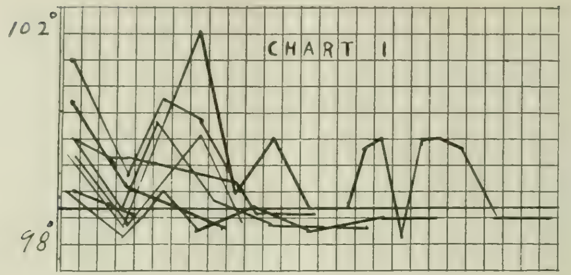
Case 4. First attack at 26. Syphilis three years ago with unusually conscientious treatment, resulting in six negative Wassermanns. Three weeks ago abortion, followed by operation at general hospital. Two weeks ago restless, began to see devils and ghosts. Two days ago salvarsan intravenously. One day before admission given salvarsanized serum by lumbar puncture. On admission slightly oriented, incessant talk, and continuous motor activity. Emotional state in general exhilarated, but very labile. Flighty and destructible. Rather fixed by unsystematized delusions of poison. Fragmentary insight. Tube fed. No change after one year.

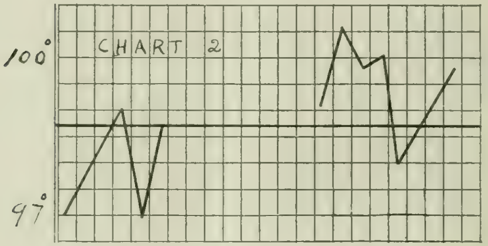
Case 5. First attack at 35. Two weeks ago "grippe." Yesterday temperature 104°. Signs of a valvular heart disease on admission. For four months a mild depression. For a week delusions of poisoning, hallucinations, alternating depression and hilarity. On admission disoriented, flighty, distractible, rhyming; extreme activity. Mood chiefly exhilarated labile. After a month semi-stuporous, temporary paralysis on the left side, blisters on finger ends. After two months, condition about as on admission. Tube fed. Catheterized. Papular eruption second week. Recovery in a year.

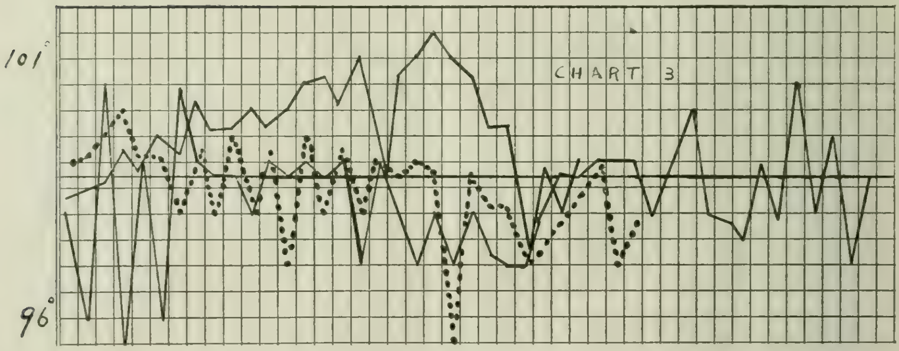
Case 6. First attack at 26. For eleven days fever, headache and backache, abdominal distress, "grippe." On admission small boil, albuminuria. For six months sensitive and worried. Seven days ago talkative, dazed, incoherent. On admission little or no orientation, flighty, distractible, incoherent at times. Extreme psychomotor activity. Mood unusually happy, playful; except on the eighth day during a sudden attack of apprehension. For several months quieting in motor activity but still flighty, distractible and showing contagious exhilaration. During most of the first two months she had furunculosis. Recovery in nine months. (Ten months.)

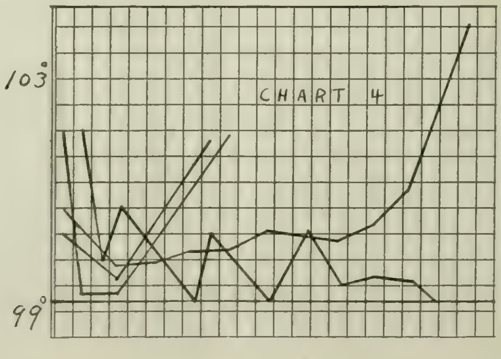
Case 7. Attack of manic depressive depression at 32. Second attack at 49. Menopause began six months ago. (Chills, sweats, head and backaches, falling sensations in abdomen.) December 18-25 confined to bed by grippe." December 26, laughing and screaming spells, talkative, flighty, exhilarated. On admission, psychomotor activity. Orientation little or none. On the second and fifth day hallucinations interrupted by short depressed periods in which the patient showed apprehension, self-accusation, was suicidal. The day after this second attack she said, "When I woke up I was as happy as a lark." At times later she was screaming, incoherent, threatening. Recovery in eight months. (Ten months.)

What is the best way to regard the gradualness of the transitions from one end of this scale to the other? Kraepelin[1] would refer us back to his concept of the manic depressive process as a whole. According to his point of view, we should say of our Case 7 in her second attack: If she had an attack of manic depressive insanity once, she has it again regardless of infection, fever or anything else." He goes much further than this in citing a case in the latest revision of his textbook: "I recall one patient who immediately after childbirth came down with what looked like a collapse delirium and quickly recovered, then after many years showed the picture of amentia and a thrombosis. There was a gradual transition from this state to an unmistakable manic excitement, in which she died. I have no doubt now that both of these attacks were manias." Secondly, Kraepelin would have us consider the purity of the clinical picture; in Case 7 the frankness of the exhilaration (here emphasized by depressive intervals), the lack of bewilderment, of hallucinations, etc. He does not dodge the issue: Case 6 is either manic depressive or it is not: the essential differential symptoms may now be covered up, but later


102°
CHART 1
98°


100°
CHART 2
97°


101°
CHART 3
96°


103°
CHART 4
99°

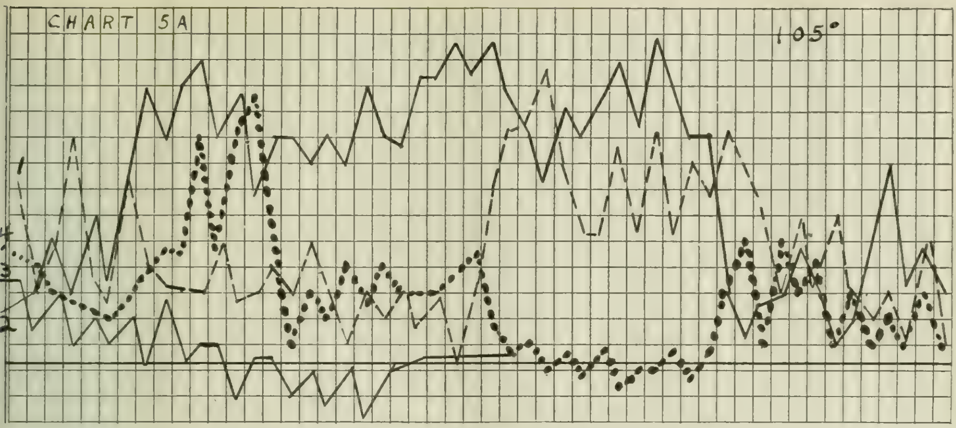
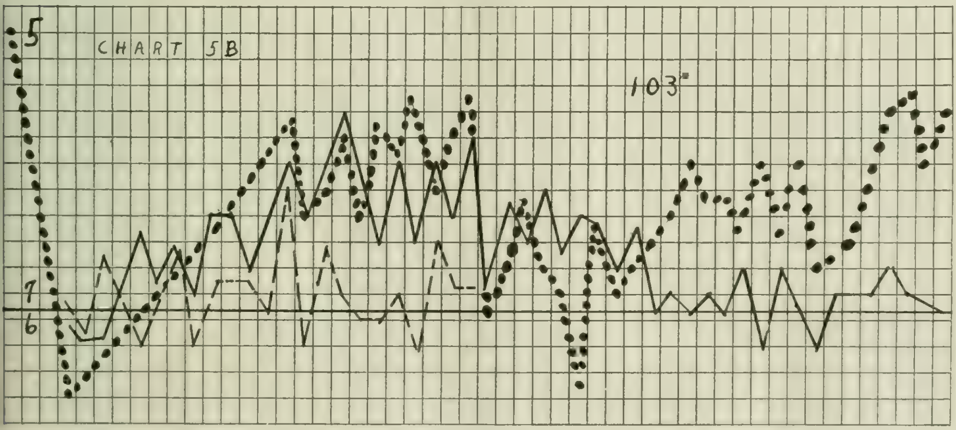
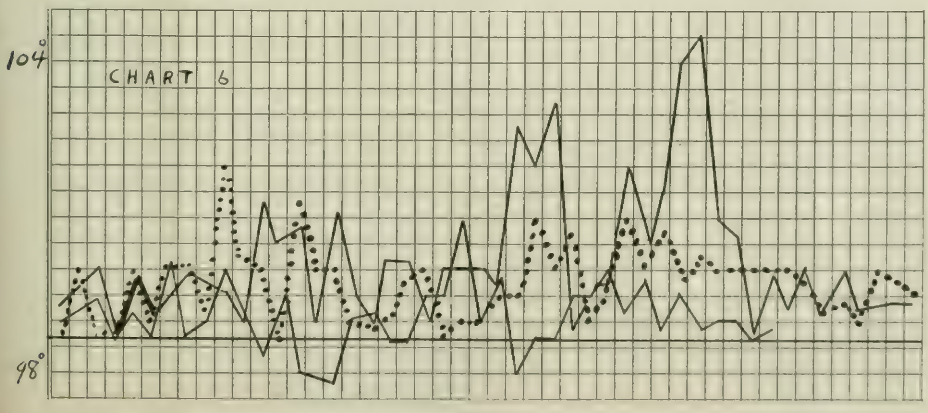


CHART 5A
105°
1
4
3
2


5
CHART 5B
103°
7
6


104°
CHART 6
98°

close clinical study will enable us to come back and take this case into the manic depressive group, or reject it.

Bonhoeffer[2] regards these transitions between our cases from a different viewpoint. According to him we may call Case 7 an endogenous manic, and at least Cases 5 and 6 as exogenous manias. He doesn't mind giving the term "true mania" to a disease picture which he believes has developed from an infection. It seems to him that this manic reaction is nothing else than a specific effect of certain toxic-infective materials. While Kraepelin is looking for variations in different infective toxins to explain different mental states (in which manic depressive conditions are not to be included) Bonhoeffer conceives that many differing toxins from different infective agents, will produce in a predisposed individual the same reaction, which may well be a manic depressive one.

In the consideration of these cases we are helped by adding a suppositious Case 8, a typical mania without infection and without delusions worthy of the name. The question then becomes—what is the relation of the central cases to this Case 8?

Cases 4, 5, and 6 have as their chief feature toxins whose origin (bacteria) are in a general way known—toxins which are producing on one side certain measurable physical changes in the body, and on the other side flight, distractibility, psychomotor activity and more or less exhilaration. Something in Case 8 is also producing the latter group of symptoms, but without physical changes which are measurable by our present day methods. The fact of personal predisposition underlies the infection as well as the mania. The series of cases points to a consideration of manic depressive symptoms as liberated directly, or indirectly, by a toxin.

In a last chart (6) are shown some cases which could be used to build a series of depressions paralleling the excitement group.

IN CONCLUSION.

All of these temperature records were made for women entering a small hospital between January 1 and July 7. One-half of them showed some fever, and fever was shown in many different diseases. Fever is now regarded as a conservative process: its definition is "the process of adaptation to such toxic agencies as can be neutralized by development of antibodies;" its producer is a protein in the blood. In a few of them we have the toxemia of severe infection producing or setting free symptom-complexes which remind us of manic depressive insanity.

In those cases where fever and psychosis seem independent a certain unity comes with the view that the body is engaged in two defense reactions at the same time.

REFERENCES.

[1] Kraepelin: Psychiatrie, 8th Ed., Vol. ii, Chapt. iv.
[2] Bonhoeffer: Die Psychosen, 1912, Hb. d. P., Sp. 1, iii, i, 109.

Book Review.

The Modern Treatment of Mental and Nervous Disorders. By Bernard Hart, M.D. New York: Longmans, Green & Company. 1918.

The problems presented to the profession by mental and nervous disorders have been attacked throughout medical history from different points of view. This volume, *The Modern Treatment of Mental and Nervous Disorders,* presents the two main schools of thought which have arisen in regard to the causation and treatment of these conditions. One group maintains that physiological disorders in the brain or other organs are responsible for mental and nervous disturbances; the psychological theory, on the other hand, attributes them to mental causes. This volume expresses the belief that in every case both physiological and psychological factors are present in the chain of causation. In cases where the former predominate, physiological methods of treatment should be emphasized; where psychological factors are predominant, treatment must be of a psychological character. Investigation and research are needed in order to determine more accurately the relative importance of these two types This book considers the facilities available for treatment; for actual insanity there seems to be ample provision, but for the early stages of mental disturbance and for nervous disorders, adequate means are lacking. The war has made it necessary to provide treatment for numerous cases of "shell shock": the author of this book asks that it be remembered that these cases are essentially the same as many nervous disorders in civil life, and that the methods which have been used with success during the war, together with organized investigation and teaching, will be made available for civilians.

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DIETARY EXPERIMENTS IN PRODUCING PELLAGRA.

In an attempt to determine whether or not pellagra is a disease caused by dietary deficiency, investigations have been made in this country, and also in Egypt. A comparison of the evidence yielded by these two experiments is of considerable interest, particularly as in the experiment conducted in this country a deliberate attempt was made to produce the disease in subjects who volunteered for the purpose, while in Egypt pellagra broke out as a natural consequence of a condition favorable to the development of the disease.

The experiment undertaken in this country at the Rankin Farm of the Mississippi State Penitentiary is recorded in Bulletin 120 of the Hygienic Laboratory of the Public Health Service. In 1915 twelve white convicts volunteered for the experiment, to test the possibility of producing pellagra in previously healthy men by means of a one-sided monotonous diet composed chiefly of cereal products, which previous studies have given reason to believe is associated with a high pellagra incidence. The men were segregated and placed under special guard, and eleven remained throughout the experiment. There is no history of any previous occurrence of pellagra on this farm, and no direct communication with the outside world was allowed the men under experimental observation. The sanitary conditions were good, and no work involving more than a moderate light muscular exertion was required of the volunteers. From February 4 to April 19, the men were kept under observation without any change being made in the regular prison fare, thereby allowing opportunity for observing any evidence of existing pellagra had there been any. The second period extended from April 19 to October 31; during this time the volunteers were subjected to an experimental diet in which the principal ingredients were highly milled wheat flour, maize meal and grits, cornstarch, white rice, cane sugar, sweet potatoes, pork fat, cabbage, collards, turnips, turnip greens, coffee, Royal baking powder, salt, and pepper. During the first three months some buttermilk was used in the making of wheat biscuits. This study suggests that in the production of pellagra, the dietary factors to be considered as possibly essential are: (1) an amin acid deficiency; (2) a deficient or faulty constitution of the mineral supply, possibly, but doubtfully; (3) a deficiency in the fat soluble vitamine intake, and perhaps (4) an as yet unknown (vitamine ?) factor. It still remains to be determined what combination of these factors constitutes the specific pellagra-producing dietary defect or defects. As pellagra developed in at least six of the eleven volunteers during the time in which they were observed, the investigators feel justified in concluding that diet is at least the primary controlling etiological factor in the development of pellagra.

To a similar conclusion point the results of the investigations carried on at Port Said, Egypt, where a group of Armenian refugees landed after being driven from their homes near Antioch because of Turkish oppression. The group of four thousand survivors, four hundred of them children and five hundred others between four and fourteen years, had been subjected to privations of all sorts before reaching the camp at Port Said. After a period of about six months, a disorder recognized afterwards as pellagrous, broke out, affecting about five hundred of the campers. The report of the investigation, undertaken by Dr. White, deputy director of the public health laboratories of Cairo, states that there was apparently no special distribution of the disease in relation to the different parts of the camp. The workmen, chiefly farmers employed from outside the camp, were obliged to live on the camp diet, having comparatively little money with which to supplement their diet. Other conditions were not favorable to the development of the disease; the water supply was above suspicion, the disposal of excreta was managed in a sanitary way, and there was no reason to believe insect carriers had a part in the outbreak. An improvement in the dietary, however, with no further development of the disease thereafter, seems to leave no doubt in this case, as in the case of the experiments conducted at Rankin Farm, of the significance of dietary deficiency in the development of pellagra.

MEDICAL NOTES.

U. S. Public Health Service Hospital for "Shell-Shocked" Soldiers—The new government hospital where the U. S. Public Health Service will provide special care and treatment for "shell-shocked" soldiers was opened at Perryville, Maryland, on September 24, with the transfer of over 100 patients from the temporary hospital at Cape May, N. J. The new institution is in charge of Dr. E. H. Mullan, an experienced regular officer of the Public Health Service, who has been the commanding officer at Cape May.

The Government reservation at Perryville offers exceptional opportunities for special care and treatment of the mild types of mental disorders included in the term "shell shock"; for in addition to the main hospital building, there are numerous individual cottages where special care and a home-like environment can be provided when it is necessary for the promotion of the patient's recovery.

At the present time the Public Health Service has under treatment over twelve thousand discharged soldiers suffering from "shell shock" and other mental disorders. Of these, 5578 are in hospitals operated by the Service, the others are in other hospitals where proper care and treatment are provided under contract.

Reports received from the Government tuberculosis sanatoria of the United States Public Health Service demonstrate the great value of occupational therapy as an adjunct in the treatment of discharged and disabled soldiers. Occupational therapy as carried out by the reconstruction aides of the United States Public Health Service, consists chiefly of mental work and manual handicraft designed for curative and diversional purposes. Physicians in charge of tuberculosis sanatoria often have been discouraged by the failure of a large proportion of their patients to remain under treatment a sufficiently long period. Many of the patients, disregarding the advice of their physicians, leave within a month of their admission. The Government report states that out of 392 patients admitted to one sanatorium, 263 took occupational therapy and 129 did not. Of the former only two patients left the hospital against the advice of physicians in charge. On the other hand, of the 129 who did not take occupational therapy, 83 either deserted or left the hospital against the advice of the physicians in charge. This is less than 1% among the former, as against 65% among the latter class of patients.

Occupational therapy is one of the latest developments in the modern care of patients. It is applicable to all kinds of conditions, both for direct, curative action, for the improvement of function of muscles and joints, and for the purpose of stabilizing the patient by increasing his morale. The results obtained by the United States Public Health Service have been excellent. Occupational therapy is not vocational training. In the hospitals conducted by the U. S. Public Health Service occupational therapy is given to bed patients and to convalescent patients. Not until the patient has recovered is this form of therapy succeeded by vocational training. The Public Health Service operates the largest unit now engaged in occupational therapy and physiotherapy, and employs over 300 expert aides, the greater part of whom are women.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending October 16, 1920, the number of deaths reported was 184 against 203 last year, with a rate of 12.83 against 13.29 last year. There were 37 deaths under one year of age against 39 last year.

The number of cases of principal reportable diseases were: Diphtheria, 40; scarlet fever, 31; measles, 7; whooping cough, 20; typhoid fever, 2; tuberculosis, 35.

Included in the above were the following cases of non-residents: Diphtheria, 10; scarlet fever, 3; whooping cough, 1; tuberculosis, 5.

Total deaths from these diseases were: Diphtheria, 5; whooping cough, 2; typhoid fever, 1; tuberculosis, 8.

Included in the above were the following cases of non-residents: Diphtheria, 2; tuberculosis, 1.

Infantile paralysis cases, 11; deaths, 3.

Infantile Paralysis in Boston and Massachusetts.—Reports made to the Massachusetts State Department of Health of new cases of infantile paralysis for the forty-eight hours ending September 27 included thirteen cases, reported from the following towns: Reading, two; and one each from Boston, Beverly, Malden, Brookline, Quincy, Cambridge, Weymouth, Methuen, Marblehead, Natick and Newton. For the week ending September 25, the total new cases were sixty-eight against sixty-six for the previous week; fifty-three for the week before that and fifty-two for one week prior to that. On September 28, twenty-five new cases were reported for the preceding twenty-four hours. Of these cases seven were reported from Boston, three from Haverhill, two each from Brockton and Waltham, and one from Lowell, Beverly, Holliston, Malden, Somerville, Winthrop, Medford, Lexington, Manchester and Framingham. The epidemic reached its height in 1916 during the week of September 23, with a total number of 186 cases. The highest weekly figure reached this year has been 68, during the week ending September 25.

Clinical and Surgical Association of Massachusetts.—At a meeting held recently in Worcester there was organized the Clinical and Surgical Association of Massachusetts. The objects of the Association and methods for work in the future were clearly defined. It was felt that the organization should be democratic, and that no surgeons upon whom major surgical responsibilities must of necessity fall should be excluded, provided they measure up to the legal requirements of the state in which they reside and have had adequate education and have observed ethical standards. The following officers of the Association were elected: George H. Gray, M.D., F.A.C.S., Lynn, president; C. A. Bonney, M.D., New Bedford, and C. B. Gay, M.D., Fitchburg, vice-presidents; S. Chase Tucker, M.D., Peabody, secretary; and M. A. Tighe, M.D., Lowell, treasurer.

The Association has announced that in future it will undertake to provide:

1st. An annual surgical congress in Boston—the first one to be held November 10th and 11th, 1920, at which the clinics will be given at the leading hospitals by leaders of the profession,—which will be comprehensive and democratic.

2nd. General meetings at which addresses on subjects of special interest will be given by someone who is recognized as an authority in his line.

The necessary business of the Association will be transacted at these meetings.

Ample provision for the entertainment of the members, their families and guests.

3rd. The Association will provide opportunity for full discussion of all matters concerning the profession and material interests of its members, and the public, and institute such means for their accomplishment as seems best to the majority.

Under material interests the matter of Legislation would seem to be of special importance, and a special committee is projected whose business shall be to watch and report upon matters of that kind with recommendation for action.

The Charter of this Association is open till the close of the November Congress, in order that all who believe in its purposes and are honestly trying to help, and looking forward to a fuller coöperation, may join.

A welcome is extended to all surgeons eligible to membership in our Association, and it is necessary that prompt application be made to insure adequate accommodations for the November Congress.

Program of Events will be forwarded at a later date to all who express an interest or desire to unite themselves with this organization.

NEW ENGLAND NOTES.

French Orphanage Fund.—The New England branch of the French Orphanage Fund has reported contributions to the amount of $618,987.86.

Miscellany.

ABSTRACT OF REPORT ON EYE INJURIES.

By Francis D. Donoghue, M.D., Boston,
Medical Adviser, Massachusetts Industrial Accident Board.

The purpose of the medical committee in preparing this report should be not to go back of existing laws or to concern themselves with the reasons underlying specific compensation payments. A principle honored by general acceptation must serve the purpose of practicability. It may be considered unwise, therefore, to suggest radical changes, but rather to concern ourselves with simplifying by broad interpretation the administrative problems.

It is our purpose to call attention to statutory defects concerning the conditions under which specific compensation is to be granted following ocular injury. In some acts it is laid down that specific compensation is to be granted when vision is reduced to one-tenth of normal with glasses. But what constitutes normal, and how is a board of laymen to determine intricate points in higher physics when statutory language is either defective, ambiguous, or nonspecific? To correct this situation, let us lay down two theses:

1. Normal central visual acuity is not normal vision.
2. One-tenth of normal vision does not mean one-tenth of normal central visual acuity alone.

Attempts to reduce complex human mechanism to formulas are very old. Nowhere has this tendency been more pronounced than in the attempt to formularize visual economics. And both effort and object are alike laudable were it not for the fact that we are dealing not in terms of constants nor of approximate constants but with a multiplicity of variables admitting of such broad limits of interpretation that in each instance the variable becomes a subject of expert discussion. Thus when the number of such variable factors approach 15 to 20 to the completed formula with the end design of estimating visual diminution in percentage, together with its value to the particular individual, of what practical value is such a completed formula if each component term is again to be made the object matter of expert controversy and time loss?

The human machine is not the sum of its parts; a man is not the sum of his functions. He is the sum of his functions plus an individuality. This individuality—it is bromidic to say it—is the difference between success and failure, between artistic achievement and barren years of effort, between efficient economic output and discouragement.

To particularize: for 35 years attempts have been made to so estimate visual diminution or loss in terms of central and peripheral visual acuity—in percentage, in terms of age, occupation, social status, general health, education, physical type—residual condition of opposite impaired or unimpaired eye, and many other more or less factors with the idea of rule of thumb adjustment in visual loss from injury or disease. As in so many other avenues of human activity, such data can be computed only as integers and measured in their entirety by the life trained individual who can properly separate the essential from the non-essential and winnow grain from the chaff.

Formula construction applied to the human eye and its functions has been done 25 years since, and thoroughly done, admitting of but little improvement. If you concede the value of a formula having for its aim estimation of economic visual loss in percentage it is ready at hand and has been so for a quarter of a century and appeared in *Visual Economics*, by Magnus and Wurdemann, 1902. More recently we have had the efforts of the Chicago Ophthalmological Society reported by Dr. Frank Allport in the *Monthly Labor Review* of the United States Bureau of Labor Statistics of April, 1920.

The need is not so much for a measure of central visual acuity under this table or that (and Snellen serves perfectly well without embellishment) as a measure of practicable vision. No attempt to modify any present standard of central visual acuity meets this requirement, and so many are the factors to be taken into consideration in the individual case, some of which, naming only a few, are intensity of the light sense, size and character of the visual field, industrial requirement of the individual case, previous training, doctrine of master eye associated with right or left handedness, and muscular errors, that any attempt to create an arbitrary table which would adequately evaluate these factors is a practical impossibility.

It is, therefore, evident that those men involved with the practical administration of the law involving complex formulas and scientific facts must choose a practical and working ground between tables and charts or the other extreme of mathematical formulas, impracticable by reason of their complexity even if correct in the scientific sense.

In administering present laws and in striving for changes, such laws as have the wording "to one-tenth of normal vision with glasses," are unjust and cannot be too quickly discarded. Three-tenths should be a minimum, and specific compensation should be granted when vision is reduced to three-tenths of normal central visual acuity if no concurrent field or muscular defect exists.

Specific compensation for the loss of vision should be within the discretion of industrial-accident boards, who in granting such compensation should have in mind the occupational visual requirements, previous training of the injured employee, and the fact that one eye was better than the other before the injury. When central visual acuity of five-tenths of normal with glasses exists, specific compensation should not be granted unless a considerable defect of the visual field exists whereby the resulting vision is impracticable.

Industrial-accident boards should take into account not only central visual acuity but consider central or peripheral field defects of permanent or annoying conditions, such as dazzle, blend, or diffusion circle. Arbitrary construction of present laws may work an injustice in a very large portion of cases.

To adjudge such cases, the rationale must be:

1. Is binocular vision necessary for the occupation?
2. Does the employee have binocular vision?
3. Is the resultant vision of the injured eye such as to produce useful or non-useful binocular vision?

It then follows that for an equitable award in the given case, at least the following procedure must be carried out:

1. The exact vision of either eye must be established.
2. The master eye must be determined.
3. The visual needs of the particular occupation must be considered (not difficult).
4. A decision should be rendered, after hearing testimony on those three points, as to whether the vision in the injured eye is so low as to preclude useful binocular vision in the individual's occupation.

In board practice this would readily work itself out (which amounts to a paraphrase of the foregoing)—

1. Categorizing occupations in terms of their visual requirements.
2. Obtaining visual data of injured and other eye by impartial examinations, together with a statement as to binocular vision and master eye.
3. Determining by conference, hearing, or even by impartial report alone (as is possible in all but very few of these cases) whether the resultant vision in the injured eye is so efficient in producing binocular vision that the binocular vision thus obtained will enable the employee to carry on his occupation as before.

The boards may well consider the establishment of standard methods of examinations, and as the law at present reads "to one-tenth of normal vision," the committee considers standardization upon that basis, although the same standards apply if the minimum vision were stated as two-tenths or three-tenths, and as many laws read "with glasses," that also is considered.

a. A definition of normal vision expressed in terms of ability to correctly interpret form at infinity.

b. Test object and illumination.

c. Examination methods.

d. What is considered one-tenth of normal vision.

e. A word as to the practicability of that part of the law which reads "with glasses."

a. By normal vision is meant the ability to correctly interpret at infinity symbols that are constructed according to definite mathematical formulas, in that the letter or ideograph as a whole must subtend an arc whose visual angle is five minutes and the component parts of the letter a visual angle of one minute measured from the top and bottom of the letter to the nodal point of the eye. The symbols used may be letters in English (Roman), Hebrew, Russian, Greek, or any other form of letters or hieroglyphics or ideographs provided only the arc subtended be five minutes and the parts one minute.

b. The letters or symbols should be illuminated more diffusely than focally from any steady source and within rather broad limits, say of from 2.5 to 5 foot candles when artificially illuminated (and for purpose of uniformity artificial illumination is always best), but in no case to be so overilluminated that glare and cross lights result. The illuminating source should be screened from the examined. The symbols should, except in the instance of measuring the light sense, as in glaucoma or optic atrophy, show marked contrast to the background. Some have personal preference for India ink or lampblack etched into white porcelain and as second choice black printed letters on a white card.

c. The examined is placed at infinity (the distance at which accommodation and convergence no longer act, roughly 21 feet) and is instructed to read—each in language of preference—and in the case of illiterates to tell the content of an ideographic card. Having ascertained the visual acuity of either and both eyes at infinity, the individual is moved to different distances and again told to read to the extent of his ability. This properly done is a time-consuming maneuver but has the desirable quality of exactness in that a half dozen or a dozen distances may be tried and the result fraction or percentage must always be the same. Such procedure is the only way that exact vision may be obtained and proved, and must accord with the corroborative results of skiascopy, keratometry and examination of the fundi. These last three should always be done, and a record of vision without these records, while not valueless, is inexact. With them in experienced hands there can be no cavil as to visual results, either in those cases which are either just above or just below the arbitrary one-tenth of normal standard the law sets. Such method contrasts violently with the rule of thumb adopted in quick examinations of placing the patient 20 feet from the card and asking him if he can "see the big E." The necessity of using skiascopy, keratometry, and funthe examinations is shown if the law expressly states vision with corrective glasses, and corrective glasses are properly not a matter of subjective choice as an individual part, but are a carefully worked out formula obtained objectively by these methods before being put upon the patient for correction. To sum up, either eye is tested separately at varying distances for the purpose of proof and checking, and further checked by objective methods.

d. That eye should be considered below one-tenth of normal which with correction fails to read test symbols designated for ten times the distance of the patient from the symbol, repeating the test at varying distances and checking for uniformity of results and finally showing a consistence with objective tests.

e. A word as to glasses. In just the same way that a thick biconvex lens of 12 diopters over an eye operated for cataract can not be worn for practical purposes when a good opposite eye is present, and consequently for purpose of the law such an eye is to be considered as lost or valueless, just so impracticable is the correction of the irregular astigmatism caused by corneal cut (and a very large percentage of industrial eye injury results in corneal scarring from cut, burn, or traumatic ulcer), since the glass which corrects must needs be adjusted to such a degree of nicety as regards axis that in event of opposite sound eye, the glass which corrects the injured eye is generally of no value to a laborer or an artisan, and oftentimes is not tolerated even when urged. In this respect the law "with glasses" should be as broadly interpreted as in the instance of the cataract glass. In the working out of such a revised law a proper report of ocular examinations should contain a statement, not merely of the central visual acuity, but also a statement of field measurement of the light sense, refraction, and adaptation index of the particular eye to the individual's occupation both before and after injury (if possible).

To summarize, a standard eye examination would be about as follows:

1. A visual test—with vision expressed for either eye, according to Snellen or Monoyer, both in the refracted or unrefracted states under a diffused light of not less than 2-foot candles and not so great as to produce glare. This gives wide range.
2. The nature of the refraction.
3. A statement as to the fundus and refractive media.
4. The retinoscopic data of either eye.
5. The ophthalmometric data of either eye.
6. The visual fields—in important cases reduced to diagrams in degrees—giving peripheral limitations, central, paracentral and peripheral scotomata.
7. Data of external eye.
8. The muscular balance.
9. Date of adnexa.

RECENT DEATH.

Dr. Harry Edward Sears of Beverly, Mass., died October 20, 1920, in his office at 25 Broadway.

Dr. Sears was born April 11, 1870, the son of Edward S. and Isabelle (Wagner) Sears, and was a descendant of Richard Sears of the Plymouth Colony of 1633. He was educated at Boston Latin School and at Harvard, where he received the degree of A.B. in 1893; and at Harvard Medical School, from which he was graduated in 1896. For more than 20 years he had been a practising physician and surgeon in Beverly, during which time he had been visiting surgeon to Beverly Hospital. He joined the Massachusetts Medical Society in 1897 and had been a councilor from the Essex South District. At the time of his death he was associate medical examiner for the seventh Essex District.

When the United States entered the World War Dr. Sears at once interested himself in the formation of Field Hospital Unit No. 30, which went to France from Fort Ethan Allen, Vermont. Before going, however, he helped to organize two similar units.

Upon his arrival in France he was assigned to the 5th Sanitary Division and later was transferred to Evacuation Hospital No. 1, and still later to No. 37. He received his discharge from the Army in May, 1919.

Dr. Sears' service as a member of the Medical Corps of the American Expeditionary Forces in France was such that he was promoted to the rank of lieutenant-colonel. He was one of the recognized expert pistol shots in the country and represented the United States at the Olympic meet at Stockholm in 1908.

Dr. Sears was married in 1902 to Miss Myrtle Walker of Beverly who, with two sons, survives him. He was a Mason and a member of various medical fraternities and social clubs.

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SOCIETY NOTICE.

Clinical and Surgical Association of Massachusetts.—The first meeting of the Clinical and Surgical Association of Massachusetts will be held at the Boston City Club on November 9, 10, and 11. At the first annual dinner on November 9, addresses will be made by the President, Dr. George H. Gray, F.A.C.S., and by Dr. John B. Deaver, F.A.C.S., Philadelphia. On November 10 clinics will be held at the principal hospitals in the city during the day; in the evening there will be a general meeting at which remarks will be made by Dr. F. J. Cotton, F.A.C.S., Chairman of the State Branch of the American College of Surgeons, and an illustrated address on "Osteoplastic Surgery" will be given by Dr. F. H. Albee, F.A.C.S., New York. Clinics will be held on November 11.

All surgeons connected with reguarly established hospitals in Massachusetts and adjoining states are urged to attend this first clinical meeting to familiarize themselves with the purposes and working plans of the Association. The officers of the Association are: Dr. George H. Gray, F.A.C.S., Lynn, President; Dr. C. A. Bonney, New Bedford, and Dr. C. B. Gay, Fitchburg, Vice-Presidents; Dr. S. Chase Tucker, Peabody, Secretary; and Dr. M. A. Tighe, Lowell, Treasurer.

Suffolk District Medical Society.—The Censors of the Suffolk District Medical Society will meet for the examination of candidates at the Medical Library, 8 The Fenway, Thursday, November 4, 1920, at four o'clock.

Candidates should make personal application to the Secretary and present their medical diploma at least one week before the examination.

Richard H. Miller, *Secretary.*

402 Marlborough Street, Boston.

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REVIEW OF UNTOWARD EFFECTS FOLLOWING ARSPHENAMINE AND ITS DERIVATIVES.

By William P. Boardman, M.D., Boston.

Assistant to Physician for Diseases of the Skin, Boston City Hospital; Instructor in Dermatology and Syphilis, Tufts Medical School.

Now that it is about ten years since salvarsan was first introduced, it would seem that, though it is still too early to say much about how far we have progressed in the cure of syphilis, we should, nevertheless, be able to tell what untoward effects may follow its use.

In the first place, what is the normal reaction following its use? Usually there is nothing or only a slight malaise with nausea for a few hours. Nearly half the patients show a moderate fever on the day of injection with phenomena due to dilatation of the capillaries, a direct action of arsenic, showing flushing of the face, occasionally slight edema of the lids or lips, chilly sensations, more or less marked, often followed by sweating, occasionally profuse; fairly often nausea and slight headache. There may be vomiting once or twice, or even repeated during the night, with severe headache and marked congestion of the conjunctivae. If active lesions are present, there is often a temporary exaggeration of these, the Herxheimer reaction. Formerly these general symptoms were regarded as due in large part to impurities in the water, but during the war the water used was frequently not freshly distilled and so long as it was fairly fresh and absolutely sterile, it did not seem to cause a great deal more reaction. As these symptoms are far more common in those having active lesions at the time, it seems that very likely they are a sort of a general Herxheimer reaction and Gobeau[1] thinks that this is so frequently the case that the immediate reaction means considerable as regards present activity of the disease. On the other hand, these are all symptoms described in the pharmacology of arsenic and it would seem that most of the reactions could be ascribed to toxic effects of the latter, in a large number of cases, with the impurities of the water and the generalized Herxheimer reaction as contributory factors. The varying personal idiosyncrasies toward the drug would account for the freedom of some people from the reactions and the affections of others. Then, too, it is quite noticeable that, in some cases, the reactions are increased by inability of the patient to eliminate the drug through disease of the liver and kidneys, especially the latter.

These normal reactions last a few hours, not more than ten or twelve or at the very most twenty-four. If the fever lasts longer than this it is a sign of intolerance. Another type of fever showing intolerance on the part of the patient is that appearing from the second to the sixth day, usually after the patient has had several previous doses of the drug. It is also seen after mercury and if the patient has had both we distinguish those due to mercury by other signs of mercury poisoning, such as the metallic taste, salivation, fetid odor of breath and soreness of the gums. When due to the arsphenamine, the fever is often accompanied by other signs, such as severe vomiting and headache, urticarial lesions at site of injection or elsewhere on the body, or a general erythematous rash, edema of the face and hands and feet and pains in the bones or joints. This fever generally reaches 102 or 103° F., or even higher, and instead of falling at once as in the normal reaction, remains elevated for three or four days or longer, falling by lysis. This is always a sign of intolerance and the drug should either be suspended for a time or entirely interrupted.

The skin manifestations usually appear eight to ten days after the injection of arsphenamine, though they may appear immediately. The outbreak is usually accompanied by considerable fever, headache and general malaise, with occasional vomiting. Urticarial, scarlatiniform and morbilliform rashes and, occasionally herpes labialis and even herpes zoster have been described. These all last three to six days. Those resembling measles and scarlet fever are followed by desquamation. A more serious skin complication is dermatitis exfoliativa. One case seen lately shows the milder form of this:

Mrs. H., aged 58, housewife. Diagnosis: Tabes. Wassermann reaction on blood and spinal fluid strongly positive. Cell count 75. Globulin positive. Given six doses of diarsenol (0.4 to 0.6) at intervals of one to two weeks. Severe, prolonged reaction following each dose, especially the later ones. No mercury given. Fourteen days after last dose general, intense redness of skin with beginning scaling. In places oozing and crusting, especially where surface has been rubbed. Followed by lamellar desquamation of entire surface, including palms and soles, which was completed about the seventeenth day. Considerable edema of face and of forearms and lower legs at start with marked congestion of conjunctivae. Mucous membranes normal except for some fissuring and scaling of lips. Urine showed no albumin or sugar at any time.

Following is a case from the skin service at the Boston City Hospital, reported through the kindness of Dr. T. W. Thorndike, with postmortem findings quoted through the courtesy of the medical examiner, Dr. T. W. Leary.

G. S. Male. Aged 36. Blacksmith. Admitted to hospital July 8, 1919. History of chancre three months previously with positive Wassermann reaction. Treated by private physician with mercury pills and five doses of arsphenamine (dose and variety of drug not ascertained) during a period of four weeks. Last dose eight days before entrance to hospital. Present condition started five days after last injection. On entrance showed general erythema with profuse scaling, oozing and crusting in places. Edema of face and extremities. Process soon involved mouth, with swollen and bleeding gums and inability to take nourishment. Rather rapid loss of strength and emaciation. Urine showed slightest possible trace of albumin at entrance, which soon disappeared. Temperature normal for first few days. Slight watery discharge from both ears at entrance, which persisted. Malnutrition increased. Septic temperature and cough developed and patient died four weeks after onset of rash. Postmortem showed double otitis media, broncho-pneumonia and practically nothing else.

Another skin condition which has been described is melanosis. Generally after the last of a course of injections the patient has had an erythematous rash followed by desquamation which latter persisted for some time and was accompanied by a general bronzing of the skin of the entire surface. In several cases reported there was also a keratosis of the palms and soles, in one of them markedly warty, such as seen in chronic arsenic poisoning. One case of this observed in my practice was a woman, Mrs. J. P., aged 38, who had had a gumma of the liver removed some seven years previously and had lately developed lichen planus, for which she had received considerable arsenic in the form of Fowler's solution. Shortly after receiving salvarsan, 0.6 g., without rash or symptoms of malaise, the skin gradually turned dark, especially about the folds of the axillae and on the buttocks until the skin was generally of a dark brown tint. Like the cases mentioned in the literature, there was no pigmentation of the mucous membranes such as is found in Addison's disease and, like most of them, the color, after a matter of three or four years, has gradually returned to normal. This case never showed the keratoses of the palms and soles. These cases have been noted in all stages of syphilis under treatment with salvarsan. After the milder scarlatiniform and morbilliform rashes the arsphenamine may be resumed in a few weeks without much fear of a recurrence of the rash, though a few cases of recurrence have been reported. It seems better, as suggested by Gutmann,[2] to change the preparation in these cases. After the dermatitis exfoliativa, or melanosis, it would seem better to avoid further use of arsphenamine preparations, or at any rate to wait at least for several months and then proceed with very small doses and at long intervals. All these are undoubtedly due to arsenic poisoning as they have all been noted in chronic arsenic poisoning cases. Possibly an idiosyncrasy makes the patient more susceptible, but it is arsenic poisoning just the same.

Outside of the neuralgic pains often seen after arsphenamine, little has been seen or written on the bad after effects of the drug on the peripheral nervous system. Variot and Bouquier,[3] however, report one case of peripheral neuritis in the legs, going on to paralysis and reaction of degeneration in the nerve trunks in a congenital case who had received three courses of six or eight injections each at three-week intervals. Pains in the legs were complained of during the last course. Pierre Marie[4] reports a transverse myelitis in another congenital case following an intensive course of treatment with arsenobenzol. Bory[5] reports a case of a primary lesion treated with three doses of arsphenamine who developed meningitis and myelitis commencing three days after the last dose and which left the patient with a spastic paraplegia. Closely allied to the peripheral nervous system is a polyarthritis described both by Chabonier, and Bleton[6] and also by Kutznitzky.[7] This seems to appear more frequently in women and especially in those who have received a good deal of arsphenamine. It appears about two weeks after the last dose of the drug, with pains, especially in the morning, but wearing off somewhat during the day. The joints appear normal on examination and the trouble seems to be in the bursae and muscular attachments around the joints. Any joints may be affected, often several of the larger ones at one time. The trouble clears up spontaneously in a few weeks. It is not materially affected as a rule by salicylates or mercury or arsphenamine. As this condition has been observed in cases other than syphilis who were treated with arsenic preparations, I think that there can be no question but that this is a case of poisonous effect of the drug. In speaking of the after effects of arsphenamine on the nervous system, I have purposely omitted speaking of the affection of the optic and auditory nerves, as I think that these have been shown to be unquestionably due to a recidive from too little and not too much treatment and, therefore, are due to syphilis and not to arsphenamine.

When we consider the action of arsphenamine on the brain, we come to one of the most serious aspects of the accidents following its use. The common pathological findings in these cases which have terminated fatally are an edema of the brain, frequently with minute hemorrhages, especially in the floor of the lateral ventricles. There has also been seen a true hemorrhagic encephalitis with multiple hemorrhages all over the surface of the brain. Many of the cases in the literature described as the latter or edema of the brain are, probably, too rapidly fatal or recover too rapidly for either condition to have developed, but there are a certain number of them, as shown by autopsy. Either directly after the injection or a few hours or even days later, the patient feels weak or has an epileptiform seizure, sometimes with fever of 102° F. or so, and then becomes unconscious. Sometimes the latter appears with very few premonitory signs. The pupils are dilated, sometimes react, and at others do not. Knee jerks are absent. Babinski present. Often tonic contractures of limbs and face muscles (trismus). Urinary incontinence, stertorous breathing, deepening of coma and death. Some of these cases have apparently been saved by venesection, lumbar puncture, salt solution infusions, adrenalin subcutaneously and intravenously and cardiac stimulation.

Another interesting and important accident following arsphenamine is the so-called anaphylactoid reaction. In some of these cases nothing is found at autopsy. In others edema of the lungs, frequently associated with an acute or chronic renal condition. Jackson & Smith[8] have shown that on dogs toxic symptoms are produced by increasing the concentration of the drug and at the same time increasing the rapidity of injection. Partly owing to the action of the arsenic in paralyzing the capillaries and partly, possibly, to multiple microscopic pulmonary emboli from precipitation caused by the drug, there is an immediate and progressive increase of pulmonary blood pressure, sometimes to 100% above normal. This increase was shown to be also due in part to the alkalinity of the solution. At the same time there is a fall in the systemic blood pressure, though not so marked (25-50%). The right heart is dilated and the kidney contracted. A number of the intermediary by-products formed in the manufacture of arsphenamine were tested and found to be non-toxic. It would seem that this increase in pressure on one side of the heart with decrease on the other would be likely to cause a delirium cordis, which has been noted clinically. Moreover, it would seem that this might be the cause of death in some of these cases where nothing has been found pathologically. It would also account for the edema of the lungs in some cases where no lesion of the kidney or cardio-vascular system is present. Clinically, these cases occur frequently after several injections of the drug, more rarely after the first. More often in the cases reported, the doses given were larger than those in general use today. Many of the cases had shown so-called intoxication symptoms after previous doses. In others there is an old valvular trouble or a previous kidney lesion. It has occurred in all the stages of the syphilitic infection.

The following case is related to me by Dr. H. M. Clute:

Male. Age 38. No organic lesions. Early latent syphilis. Had received two courses of neosalvarsan (a French preparation) without serious reactions. Given 0.9 g. neoarsenobenzol (French) in 20 c.c. of freshly distilled water. Patient all right for about three minutes. He then stated that something was wrong and gripped his chest. Face became red and edema of eyelids followed. Neck veins swollen. Choking sensation. Projectile vomiting. Then marked pallor, rapid, noisy and severe dyspnea and bulging of eyes. Given camphor in oil gr. 3. and atropin gr. 1/50 s.c. Pupils dilated, but reactions were normal. Reflexes normal. In about ten minutes entirely recovered except for marked weakness and slight swelling about the eyes. Next day no ill effects except that he felt as if he had been on a spree the night before.

Many of these cases terminate fatally at once or following a few days of coma with anuria, convulsions and pulmonary edema. In the latter form there is, usually, a cardio-vascular lesion which existed previously or a kidney lesion.

In the treatment of such cases, cardiac stimulants, artificial respiration, adrenalin and tyramine have been used with some success and some failures. Many of them could be avoided by using smaller doses as a routine and watching for prolonged and late fever after previous injections and for other signs showing intoxication, more especially in the cardio-vascular and renal cases.

Another danger in cardio-vascular cases is seen in cases of cerebral endarteritis. I had an unfortunate result a few years ago in the case of a physician who had just suffered a hemiplegia due to cerebral endarteritis. I gave him one small dose of salvarsan which was well borne and seemed to improve the general condition considerably. A week later, following a second dose of 0.6 g. the patient went into coma and died in 48 hours. I feel sure that this large dose caused an increased congestion or a fresh hemorrhage which proved fatal.

In aneurisms there may be softening of the coverings and rupture following arsphenamine, as in one case reported by Dever and Boles.[9]

I have already mentioned the danger of giving arsphenamine in cases of kidney disease. On the other hand, in advanced nephritis the drug may be used with caution and without deleterious effects. We have at the present time in the Out-Patient Department of the Boston City Hospital two cases of advanced chronic nephritis who have received repeated injections of arsphenamine without the least disturbance of the kidney, as shown by careful functional tests by Dr. W. R. Ohler in the hospital laboratory.

In regard to the digestive system, vomiting and diarrhea are so common that they need only to be mentioned. However, if either is prolonged and serious, it is a sign of intolerance and should be taken into account with the next dose and the future intervals.

In regard to the liver, the important complication is jaundice. Some cases of immediate jaundice have been reported, the earliest occurring about two hours after the injection, but, though some of these are due to the immediate toxic action of the arsphenamine, probably a large number of them are really due to syphilis. On the other hand, there is an increasing number of reports of jaundice following from one to five months after the last injection of arsphenamine. These have been reported in cases where no mercury has been used, so that element can be eliminated. Many run a mild course and some are quite severe and several have terminated fatally with acute yellow atrophy. The jaundice lasts, in those cases which recover, from three to thirteen weeks. It can occur in any stage of syphilis, including tabes. It has been reported after all makes and derivatives of arsphenamine and after one or many doses. Some cases follow an erythematous rash with desquamation, but more often not. About a half have no symptoms. Many have a prodromal period of digestive disturbance with vomiting or diarrhea. Many complain of a pressure sensation over the liver region, but rarely of real pain. The liver is often enlarged, but often not. The spleen is occasionally enlarged. The urine contains bile and sometimes shows signs of irritation. The stool frequently is clay colored, but is occasionally bile stained. Those cases developing acute yellow atrophy usually run an acute stormy course with severe vomiting, rapidly developing coma and death in a few days, as the following case which I treated at the Carney Hospital:

Female. Age 28. Secondary syphilis, with rash, sore throat and headache. Three doses of neosalvarsan, each 0.9 g., at weekly intervals, followed by two injections of mercury and mercury pills. Slightly less than three months after last dose of neosalvarsan she showed slight jaundice, which was very marked a week later. Vomiting severe. Coma developed and death occurred fifteen days after onset of jaundice. Postmortem at the Boston City Hospital (record given me through the kindness of Dr. F. B. Mallory) showed acute yellow atrophy of liver, fatty degeneration of the heart, early bronchopneumonia, slight ascites, extensive general ecchymotic hemorrhage into mesentery and in one island of Langerhans of pancreas.

Without going into details, it seems fairly well established that the arsphenamine has a part in the etiology of these cases of late jaundice. Scott and Pearson claim[10] that the preceding syphilis has caused some damage to the liver cells, which gives a predisposition to later damage. Pulvermacher[11] and Zimmern,[12] after a very exhaustive discussion, think that the arsenic deposited in the liver is the main factor, but that it is made active by other conditions, such as catarrh of the stomach or duodenum or an achylia gastrica, or more commonly through the disturbances of liver function due to the low diet which the patients have had during the war. This question of low diet during the war is hardly applicable in this country, however. It has been pretty definitely shown that syphilis is not a cause in the sense of a monorecidive. The question of the benzol radical of the arsphenamine as a cause is discussed by Pulvermacher, but there is little ground for assuming that this plays any part in the etiology.

In regard to the treatment, most authors agree that salvarsan should be used again in these cases only after a long interval. Rest, diet, and alkaline salts seem to be preferred by most men.

In conclusion, we have in arsphenamine a very powerful drug for the treatment of syphilis, but one which may cause most serious lesions, especially of the skin, gastro-enteric, nervous, and cardiovascular systems, sometimes leading to death. Although some of these disturbances are unavoidable, it would seem that many of them might be averted by care in the administration and careful judgment in regard to the dosage, the intervals between the doses and the total amount given.

REFERENCES.

[1] Gobeau: Paris Médicale, Vol. xxvii, pp. 97-102

[2] Gutmann: Dermatologische Zeitschrift, 1916, Vol. xxiii, pp. 338-357.

[3] Varnot et Bouquier: Bull. et Mém. de la Soc. Méd. des Hôp. de Paris, 1918, 3 s., xlii, pp. 783-786.

[4] Pierre Marie: Discussion of paper of Varnot et Bouquier. *Loc. cit.*

[5] Bory: Bull. et Mém. de la Soc. Méd. des Hôp. de Paris, 1919, 3 s., Vol. xliii, pp. 84-87.

[6] Chabonier et Bleton: Compt. Rend. de la Soc. de Biol., 1918, vol. lxxxi, p. 339.

[7] Kutznitzky: Deutsche med. Woch., 1918, Vol. xliv, p. 934.

[8] Jackson and Smith: Jour. of Pharmacol. and Experimental Therapeutics, 1918-1919, Vol. xii, pp. 221-242.

[9] Dever and Boles: U. S. Navy Med. Bull., 1918, Vol. xii, p. 715.

[10] Scott and Pearson: Am. Jour. of Syphilis, 1919, Vol. iii, pp. 628-647.

[11] Pulvermacher: Dermatolog. Zeitschrift, 1919, Vol. xxvii, pp. 199-213.

[13] Zimmern: Dermatolog. Zeitschrift, 1919, Vol. xxvii, p. 138-162

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ARGYROL.

By Walter B. Lancaster, M.D., Boston.

Argyrol was introduced in 1902. It was originally made by extracting gliadin from wheat and treating it under pressure in an autoclave, obtaining thereby a white granular precipitate, which is said to be of the nature of a vitellin. When this is combined with silver, the resulting product is a dark brown powder containing 30% of metal.[1] Commercially the so-called vitellin is obtained from serum albumen by hydrolysis.[2] According to Marshall and Neave,[3] argyrol contains 20% of silver, not 30%.

As is usual with a new drug, exaggerated claims were made for the virtues of argyrol. About 1906 several reports appeared which seemed to settle the question of its germicidal powers in the negative. Dr. G. S. Derby[18] reported the results of some laboratory tests. He stated that argyrol was practically inert, its chief virtue being that it was harmless. Staphylococcus aureus in serum would grow after three hours in 50% argyrol. Verhoeff[4] had reached similar conclusions. The committee of the British Medical Association appointed to study the group of silver salts which had become so numerous, made a report[2] in which they said: "Argyrol has practically no bactericidal action whatever. It seems impossible to attribute the good effects which many clinicians have obtained with it to its bactericidal action."

In 1910 Post and Nicoll published in the *Journal of the American Medical Association,* Vol. LV., the results of a study of argyrol. They compared it with nitrate of silver and showed that 1% nitrate of silver was far more effective and powerful as an antiseptic and germicide than a much more costly solution of argyrol. They also pointed out that bichloride of mercury was absolutely ineffective for quick action; for example, on hands, instruments, or field of operation. If their report is analyzed it is found not so adverse as it appears at first glance. Argyrol 50% showed in ten minutes marked diminution in the number of colonies, and in thirty minutes no growth. Bichloride of mercury 1:500 showed the same, *viz.,* marked reduction after ten minutes, no growth after thirty minutes. Bichloride of mercury 1:2000 was less effective than argyrol 10%. Nitrate of silver 1:1000 gave no growth after one minute. The same was true of alcohol 50 to 70%, and of Lugol's solution of iodine in iodide of potassium 1:400. They rate argyrol as far less powerful than nitrate of silver; but do not condemn it as inert, since they show 50% argyrol to be comparable with 1:500 bichloride of mercury, and 10% argyrol with 1:2000 bichloride of mercury.

In addition to these adverse laboratory reports there were some adverse clinical reports, although they were in the decided minority. For example, J. M. Fortescue-Brickdale, in the *British Medical Journal,* September, 1906, says that he thinks a critical study of the clinical reports on argyrol would lead to conclusions similar to those he reached after investigating 40 clinical reports on collargol—evidence not of its value, but of its worthlessness. Some of the members of the American Ophthalmological Society, in discussing the papers of Drs. Standish and Bruns in 1906, were inclined to question the virtues of argyrol from a clinical standpoint.

On the other hand, if I attempted to review the clinical reports *in favor* of argyrol, the mass of material would be excessive and the report tedious. Instead of doing this, let me try to state the prevalent opinion held today as to the merits of argyrol, basing my statement on a fairly representative canvass of recent text books and of well-informed individuals. The typical answer to the question, "What do you think of argyrol?" would be, "I believe that argyrol is useful: clinical experience convinces me of this. I use it a good deal; but I know, of course, that it is almost if not quite devoid of germicidal power, and in a tight place I should prefer nitrate of silver."

In connection with my study of mercurochrome-220,[5] I came across some reports of tests of argyrol which arrested my attention. I will quote two. Dakin and Dunham[6] mention argyrol 5% as killing staphylococcus aureus in 24 hours, the same as bichloride of mercury 1:3000, better than nitrate of silver 1:300, and better than phenol 1:150. Hugh Young and his collaborators report argyrol 10% showing no growth after five hours, using B-coli and S-aureus. Argyrol 1:1000 failed to kill. One per cent. protargol failed after one hour to kill S-aureus. These very competent authors found argyrol to possess distinct germicidal power. To satisfy myself I made a few tests and was surprised to find that even as weak a solution as 10% acting on staph. aureus in serum caused no growth in culture taken after one minute, or even less in some instances.

The matter seemed worth further investigation, so the tests were repeated several times and the technique refined. The following results were found: Tests with 10% argyrol, even in serum where results are less favorable than in water or normal salt solution, gave no growth as quickly as one minute after adding the argyrol to the suspension of staph.-aureus, provided the loopful of the mixture to be tested was transferred directly to the agar tube. It was soon apparent that the appreciable quantity of argyrol transferred to the surface of the agar in making the culture in this manner was inhibiting the growth, and that the negative cultures did not mean that the microörganisms were dead. But, even so, the experiment shows that argyrol had strong antiseptic or bacteriostatic action, even if not germicidal. This calls to mind the history of bichloride of mercury, put forward by Koch as killing microörganisms in strengths as weak as 1:10,000 or even 100,000. Later it was shown that the bichloride had not killed the bacteria, but had only prevented their growth. If an antidote like ammonium sulphide were added in sufficient quantity to combine with all the bichloride of mercury as soon as the allotted time of action had expired, growth would take place. Miss Chick found that 1:500 bichloride of mercury could act on staph. aureus fifteen minutes, and then if an excess of ammonium sulphide or other similar reagent were added, the microörganisms would grow, showing that the bichloride had not killed them, although it had entered into such a combination with them that growth was impossible until the bichloride was removed.

Accordingly it was necessary to eliminate this source of error before attempting to say whether argyrol could be depended on not only to inhibit but actually to kill the microörganisms. If we were dealing with nitrate of silver, a solution of common salt would serve as the proper antidote, since the nitrate of silver would be precipitated in an insoluble chloride. Argyrol is one of the complex organic salts of silver in which the silver atom is not dissociated in solution as a silver ion, but remains so firmly attached to other atoms that sodium chloride will not produce a precipitate, nor will the silver combine with albumen, as in solutions of silver nitrate. For this reason argyrol and similar silver preparations should not be *compared* as to their action with nitrate of silver, but rather *contrasted* with its nitrate salt. The field of action and special virtues of the two are different, and fairly distinct. The nitrate is caustic (due to NO_3 ion); it acts very quickly, but also loses its effect at once in the presence of an excess either of a soluble chloride like common salt or of albumen. Argyrol is not only not caustic, it is not even irritating; it is not rendered inert by serum nor by sodium-chloride. Naturally two substances differing so widely in their properties may be expected to need different concentration of their solutions. The fact that 1% nitrate of silver is a more powerful germicide in water than argyrol in any strength, even 50%, is no reason why argyrol may not be far superior to nitrate of silver for certain other purposes; and this is indeed quite true.

Not knowing any reagent which would render argyrol inert, the only other way to eliminate it was to dilute it so much as to render its antiseptic action probably negligible. The method finally adopted was this: Solutions of argyrol of double the strength to be tested were prepared; also a suspension of staph. aureus in hydrocele fluid. These were kept at 37.5 C.[*]; 1 c.c. of argyrol and 1 c.c. of hydrocele fluid containing staph. aureus were mixed and the mixture kept at 37.5 C. At suitable intervals a loopful was taken from the mixture and transferred to a sterile tube containing 5 c.c. of sterile salt solution, and thoroughly mixed. This was to dilute the argyrol so that its further action on the microörganisms would be negligible. A loopful from this diluted sample was transferred to the surface of the agar slant and incubated. Tests were made with several different samples of hydrocele fluid and three different lots of argyrol. The argyrol was purchased in original bottles and some of the solutions were prepared by myself. Several different strains of staph. aureus were used.

The results varied within rather wide limits, which, I take it, is not unusual in experiments of this kind. Controls were made from time to time, both to show the presence and approximate number of organisms in the suspension, and to show the absence of organisms in the solutions used for sterile salt solutions.

It was not my purpose to make any exhaustive bacteriological study of the germicidal properties of argyrol—a study which should be left to bacteriologists—but only to make a few tests to confirm either the negative results of Verhoeff, Derby, and Marshall and Neave, or the positive results of Dakin and Dunham, Post and Nicoll, Young and his collaborators.

My findings convince me that the article sold at present under the trade name of "argyrol" is a powerful antiseptic as tested on staph. aureus in serum, or in salt solution, or water; it is effective in strength as weak as 1% or even less. It also has bactericidal power.

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[*] The temperature is an important factor in bacteriological as it is in chemical reactions.

especially in strengths of 10% or over—the strengths most generally recommended. It is not a rapid bactericide. It must be remembered that comparatively few drugs exist which are bactericidal in strengths that are not too irritating to be used freely in the conjunctival sac. Alcohol, if not over 70% nor less than 50% strength, is far more rapid and sure; but of course cannot be used freely in the conjunctival sac. Phenol in 2 to 5% is far too irritating and caustic to be used in the eye, except in a small way with an applicator. Iodine in iodide of potassium is effective. Bichloride of mercury is very effective as an antiseptic and enters into such combination with bacteria that simple washing does not easily separate it, so that bacteria exposed to its action are rendered practically harmless, although suitable treatment will demonstrate that they are alive and capable of active growth.

There is today very widespread belief in the clinical evidence of the value of argyrol in conditions where a drug with germicidal or antiseptic properties would seem indicated. The belief is almost as widespread that the laboratory evidence positively and definitely proves that argyrol has no germicidal power. Any apparent conflict between laboratory and clinical evidence is certain to be explained away sooner or later.

Other attempts to harmonize the apparent conflict of evidence have not been without some success: (a) Duane[7] says: "Argyrol penetrates all the recesses of the conjunctival sac, lodges in them a long time (so as to produce a continuous action), and as it gradually exudes drives before it the secretion with its contained bacteria. Argyrol forms coagula with the secretions, thus facilitating their removal by irrigation;" (b) Derby[8] points out that argyrol is remarkably free from irritating properties, hence does less harm than other drugs of its class. Though inert, it is sterile and soothing;[8] (c) Standish[9] says, "My conclusions are that the modern silver preparations (he experimented chiefly with argyrol) are efficient in the control of gonorrheal infection of the conjunctiva, and that *they have greater bactericidal properties in this disease* (italics mine) than the laboratory experiments upon other microörganisms would lead us to expect." (d) Says de Schweinitz,[10] "Some remedies may seem to render the tissues less favorable for the growth of the microörganisms, aside from their germicidal value. Argyrol belongs to this class."

I am sure that conflict between laboratory and clinical evidence cannot continue, since both are trustworthy; and here if not everywhere "all discord is harmony not understood."

REFERENCES.

[1] U. S. Dispensary, 20th edition, p. 1610.
[2] Puckner: Jour. A. M. A., and personal communication from the manufacturer.
[3] Brit. Med. Jour., August, 1906.
[4] Jour. A. M. A., January, 1906.
[5] Jour. A. M. A., 1920.
[6] Handbook of Antiseptics.
[7] Duane: Fuch's Text-book of Ophthalmology, p. 128.
[8] Derby: Trans. Am. Ophth. Soc., 1906.
[9] Trans. Am. Ophth. Soc., 1906.
[10] Text-book of Ophthalmology.

The following table shows some of the results obtained:

TABLE SHOWING RESULTS OF STAPHYLOCOCCUS AUREUS IN SERUM ACTED ON BY ARGYROL 1% TO 20% FOR PERIODS RANGING FROM ONE MINUTE TO TWENTY HOURS.

	Minutes																			Hrs.	
	1	2	3	4	5	6	8	10	12	15	20	25	30	40	45	50	60	75	90	2	20
20%				25			4			1											
"		0		0		1		+													
"					25		4			12											
"	4	1	2	1		4	0	1		4											
"		7		10		4															
"								50		16			8		1		0				
"								40					29			0	0				
"															0			0	0		
10%					1			0			0			0							
"	+		+	+																	
"						+		+			+		+								
"			+		+			+		+	+					0		0		0	
"					+		0			+	0			0							
"										6						0	0				0
5%						+			+		+			0							
"														0			0			0	
1%																					0

Numbers = Number of colonies after 24 hours' incubation.
+ (Growth) number of colonies not recorded.
0 = No growth.
Controls showed about 50 colonies.

THE RELATION OF FOOD TO INFANTILE ECZEMA.*

By Edward Scott O'Keefe, M.D., Boston.

There has been for many years a certain amount of recognition of the part played by foods in the causation or at least in the aggravation of eczema. This recognition, in the past, took the form of limitation of fats in the diet or exclusion of some cereal, the favorite being oatmeal. Recently the cutaneous food tests have been introduced and developed by numerous workers[1] in an effort to determine in a definite manner what relation may exist between foods ingested and certain affections of doubtful etiology. In this connection much attention has been given to bronchial asthma, less to eczema, urticaria, and kindred skin conditions.

The relation between a faulty diet and eczema is not a patent one, unfortunately for the infant. There is a tendency among mothers and to a less extent among physicians to put the infant upon a too liberal diet. This results in many cases in a digestive upset which teaches caution. At other times the results of the indiscretion are less obvious. The child may handle the new food without vomiting or intestinal disturbance. The microscopic examination of the stools may show no abnormality. The indigestion, however, is present and shows itself in a masked and often unrecognized form as an asthma, eczema or urticaria. These cases are as truly suffering from indigestion as are those showing the gastric and intestinal symptoms so common with faulty feeding.

We have in this type of case all the factors necessary for protein sensitization. To produce the anaphylactic phenomena it is necessary that unbroken, that is, undigested, protein molecules enter the circulation. To do this the protein food must be of a nature to resist the digestive juices and to remain chemically intact during its stay in the stomach and intestines. Such is the situation when the feeble digestive juices of an infant are too early taxed with the digestion of unsuitable foreign proteins.[2]

There is a failure to recognize that the infant's digestive apparatus has limitations which are much lower than those of the adult. The proteins, which adults ingest in their daily life, are those which are susceptible to the chemical attacks of the gastric and intestinal juices and are called digestible foods. Those substances which in general cannot be so broken down, have been eliminated by experience of the race or individual and are either never considered as food or are recognized as difficult of digestion and are avoided. The diet is adapted to the adult's power of digestion; in the infants, such adaptation is recognized as desirable, but is frequently not attained. The average mother has a confused idea of what to give and at what age to give it. Many physicians are but little less hazy upon the time and sequence of cereals, vegetables, eggs, etc. From such ill adaptations of the diet to the infant many of the cases of food sensitization result.

I have to report upon seventy cases of eczema as influenced by diet. The majority of these cases were seen first at the Dermatological Out-Patient Department of the Massachusetts General Hospital and referred to the Children's Medical Out-Patient, where they were studied and their feeding regulated. The cases were then treated jointly by the two above mentioned departments.

The plan followed was, first, a general physical examination, then a careful consideration of the child's diet, or of the mother's diet in the breast fed infants, and finally cutaneous food tests. The dietary history afforded an opportunity for regulation of feeding in general and also frequently gave suggestions as to possible offending proteins. In making the cutaneous tests linear scarifications were used. Only those tests showing a well defined erythema and wheal were considered positive. It was found more practicable to do the tests upon the back than upon the forearm, as is usually done in adults. All the children were under four years, and the majority were under two years of age.

Consideration of the table shows that 41% of these cases gave a positive reaction to one or more of the food tests, 12% showed a doubtful reaction, and the remainder were negative to any of the proteins tried. There is no doubt that positive tests would have been obtained in some of this negative group if opportunity had been given to test for a greater number of proteins. This was not possible in some instances, owing to the failure of the parents to return with the child, as requested.

Egg proteins gave a positive reaction in 30% of the cases upon which they were used, potato

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* From the Children's Medical Department, Massachusetts General Hospital.

Below are tabulated the results of the cutaneous food tests:

CHART SHOWING RESULTS OF PROTEIN SKIN REACTIONS IN 70 CASES, LISTED CHRONOLOGICALLY FROM JUNE, 1919 TO JUNE, 1920.

CASE NO.	BEEF	CORN	LACTALBUMIN	CASEIN	EGG	WHEAT	CODFISH	PORK	OAT	TOMATO	POTATO	BEAN	PEA	WALNUT	HUMAN MILK	RYE	DISCHARGED FROM SKIN ROOM
June, '19																	
1	0	0	0	+	+												D
2			0	0		0											D
3	0	+	0	0	0		0	0									D
4	0	0	0	0	+	0			+								D
5	0		+	+					0	0	0						D
6			0	0	+				0	0	0						D
7	0		0	0	0		0										
8			0	0	0	0	0			0	0	0	0				
9	0		0	0			+								0		D
10	0	0	0	0	0									0			
11	0		+	+	0	0											
12	0	0	0	+	+	0											D
13			0	0	+										0		D
14			0	0	+				+						0		
15			0	0	0												D
16		0	0	+	0				0		+						
17			0	0		±											D
18		0	0	0	0					0							
19			0	0	0	+					+						D
20	0		0	0	0	0									0		D
21			0	0	+										0		D
22			0	0											0		
23			0	0		0											D
24			+	0	0												
25	0	0	0	0	0												D
26	0	0	0	0	±				0								
27	0	0	0	0	+										0		D
28			0	+		0											D
29			+	+	0												
30		0	0	0	0	0			0			0				0	D
31			0	0	0												
32			0	0													
33	0		0	±	0				0								D
34			±	0													
35		0	0	0	0	0				0		0					D
36			0	0	0	0			0								
37			0	0	0	0			0								
38	0		0	±	0	0			0		0						D
39	0	0	0	0	+	0		0	0		0						D
40			0	0		0					0						

in 20%, casein in 16%, cod fish in 12%, lactalbumin in 11%, wheat in 9%, and corn in 5% of the cases upon which they were used.

The mother in no instance showed sensitization to the protein to which her child reacted. Ten nurslings were negative to the proteins of human milk. Nearly 20% of the series gave a history of asthma, eczema, or urticaria in some other member of the family. In several of the families one child after another developed eczema as soon as it was weaned. An exacerbation of the eczema was in many instances coincident with the eruption of a tooth.

Treatment. Each child was placed upon a diet suitable for its age. The nursing intervals and diet of the mother were adjusted in the breast fed. This included the elimination or reduction of any article in the maternal diet to which the infant was found sensitized. In the case of the other children the offending protein was eliminated from their diet if practicable. This could not be done in the instances

Below are tabulated the results of the cutaneous food tests:

CHART SHOWING RESULTS OF PROTEIN SKIN REACTIONS IN 70 CASES, LISTED CHRONOLOGICALLY FROM JUNE, 1919, TO JUNE, 1920 (*concluded*).

CASE NO.	BEEF	CORN	LACTALBUMIN	CASEIN	EGG	WHEAT	CODFISH	PORK	OAT	TOMATO	POTATO	BEAN	PEA	WALNUT	HUMAN MILK	RYE	DISCHARGED FROM SKIN ROOM
41	0	0	0	0	0	0	0	0	0								
42			0	0													D
43	0		0	0	0	0			0		±						
44			0	±	0	0			0		0						
45			0	0		0			0								
46			0	0	0				0								
47	0	0	0	0	0	0	0	0	0		0	0	0			0	
48			0	0	0												
49		0	0	0	+	0			0								D
50			0	0	+	+		0	+		+						
51			+	+													
52	0	0	0	0	0	0	0		0		0	0	0				D
53			0	0	+										0		
54			0		+	0			0								
55	0	0	0	+	+	0	0	0									
56		0	0	0	0	0			0								
57	0		+	0	0										0		
58			0	0	0			0			0						
59	0		0	0	±												
60			0	+													
61	0		0	0	0												
62			0	0	0	0			0		0						
63			+	+	+												
64			0	0	+												
65			0	0		0					0						
66			0	0	±						0						
67			0	0	0						0						
68	0		0	0	0												
69			+	±	+	+			±		+						
70			0	0	0	0			0		0						
June, '20																	
Positive	0	1	8	11	17	3	1	0	3	0	4	0	0	0	0	0	
Negative	25	18	61	54	35	28	7	7	22	5	15	5	3	1	10	3	
Doubtful	0	0	1	4	3	1	0	0	0	0	1	0	0	0	0	0	
Per cent. of positive reactions	0	5	11	16	30	9	12	0	12	0	20	0	0	0	0	0	

Cases marked (D) in last column were discharged from the Skin Room previous to June, 1920.
Cases in upper part of column are those seen early in the year, those in lower part of column those which more recently came under treatment.

where milk was the main or sole article of diet. Here an attempt was made to modify the milk in order to secure the most easily digestible mixture for the particular case.

A general scheme of treatment follows:

1. Bottle fed babies.
   a. Sensitized to casein.
      ℞ Whey and cream mixtures.
   b. Sensitized to lactalbumin.
      ℞ Boil milk and skim off coagulated albumin.
   c. Sensitized to both milk albumins.
      ℞ Peptonize the mixture or use formula with low protein.

In all instances the aim must be to adapt the mixture to the infant's particular needs, as shown by dietary history, stool examination, etc.

2. Breast fed babies.
   Regulate nursing.
   Omit from the maternal diet any article of food to which infant is found sensitized.

3. Children on general diet.
    Regulate to one suitable for age.
    Limit or omit from diet substances to which child is found sensitized.

In some instances withdrawal of the protein which caused a skin reaction seemingly had but little effect upon the course of the disease. At other times prompt improvement followed, and relapse occurred upon resumption of that particular food. Two cases, while under observation, showed positive reaction to casein and later gave a negative reaction, although the eczema was still present, though in a much less active form. This feature might be accounted for by assuming that there is a varying quantitative factor in the protein cutaneous test. Early in the disease a cutaneous response may be obtained by a smaller amount of protein than will suffice later in the case.

It is a fair presumption that some of these cases were sensitized to other than food proteins. One child was negative to all food proproteins tried. Regulation of the diet and external remedies did not result in improvement. After the removal of diseased tonsils, however, the eczema vanished and has not recurred. Since cutaneous tests for bacterial proteins were not performed in this case we can only surmise that such may have been the etiological factor here.

Sensitization in the exclusively breast fed infant was an interesting feature of the work. Some of these infants were found sensitized to proteins which they had no history of ever having ingested. One such nursling was sensitized to cow's milk casein. The eczema improved when the milk in the maternal diet was cut down to a pint a day. It was found then that to make up for this diminution in milk in her own diet, the woman had been taking cheese and cream. These were omitted from the maternal diet and the child's skin cleared completely in two weeks. This child, five months later, showed a relapse of the eczema when the mother commenced to wean him and use cow's milk in his diet. At this time he showed a negative reaction to casein. Without knowledge of his history it would have been difficult to have determined the cause of his relapse.

Another child whose mother gave a history of eating large amounts of oatmeal, showed sensitization to oat and egg proteins. The mother was intelligent and was positive the child had never been given either egg or oat in any form. The mother showed no evidence of sensitization to egg or oat and gave a negative test to both these substances. Elimination of these two articles of food did not result in improvement during the month that this case was under observation. The mother then failed to return. It was learned that the eczema had persisted.

Another nursling of six weeks gave a positive reaction to codfish. The mother's diet was said to contain a large amount of fish. This child's skin cleared up when the cod was omitted from the maternal diet.

Three other exclusively breast fed infants showed positive reactions; two to egg and one to lactalbumin. One of the two showing a reaction to egg did not clear up until weaned at the age of one year. The other showed steady improvement when the egg was omitted from the mother's diet and at the end of six weeks was free from eczema. In the nursling sensitized to casein, reduction of the milk in the maternal diet effected some improvement in a month and at the end of another month cleared up entirely and has remained so for over six months, during which time the mother has limited the milk in her diet.

Such findings suggest that foreign proteins may pass from the mother in her breast milk in sufficient amounts to result in sensitization of the infant. A biologic investigation of breast milk might throw light on this point.

Seven cases of this series showed an excess of fat in the stools. Reduction of the fat to within the individual tolerance resulted in each instance in great improvement in the skin condition. Five of these cases were sensitized to casein, one to egg, one showed no cutaneous response to any of the proteins used. In each case a relapse occurred when the fat was again increased beyond the child's tolerance as shown by stool examination. The improvement following a reduction in the fat occurred without any change in the amount of protein in the diet other than that incident to the cream reduction. In these cases the fat was the predisposing factor rather than the causative factor of the eczema. An excess of fat interfered with the digestive processes or with the integrity of the intestinal walls sufficiently to permit undigested protein molecules to enter the circulation. There is no doubt that unsuitable forms or amounts of carbohydrate in the child's diet act in a like fashion to pave the way for protein inroads.[3]

The 41% of positive reactions occurring in this series of eczemas is in striking contrast to the percentage occurring among normal children, in whom Baker[4] reports the incidence of protein sensitization to be an almost negligible factor.

In considering the results of treatment it is difficult to gauge the part played by external therapy. It is always a great comfort to the patient. In some cases, moreover, it seems to be alone sufficient to effect a cure. Theoretically it cannot be considered more than a palliative measure if we are to believe that the disease is a result of food poisoning. I should not care, however, to be deprived of the aid of the dermatologist either in the diagnosis or treatment of the disease.

As an aid to regulation of diet the protein skin tests give information which can be obtained in no other way. These tests do not supplant the older methods of determining what does and what does not agree with a particular infant, but they do supplement such methods. All persistent cases of eczema should have the benefit of whatever knowledge can be gained of their particular idiosyncrasies by this method. It should not be to the exclusion of a careful dietary history and a complete physical examination with especial attention to the stools. All these data are important, because they enable intelligent management of the child's diet.

The intimate relation shown to exist between food and eczema in so large a percentage of these cases justifies the conclusion that dietary regulation is essential in the treatment of this condition.

REFERENCES.

[1] Talbot: Boston Medical and Surgical Journal, Vol. clxxix, p. 1, 1918; Vol. clxxv, p. 409, 1916.
Blackfan: Am. Jour. Dis. Child., Vol. xi, p. 441, 1916.
Walker: Boston Medical and Surgical Journal, Vol. clxxix, p. 288, 1918; Jour. Med. Research, Vol. xxxvi, pp. 231, 237, 423, 1917; Jour. A. M. A., Vol. lxix, p. 363, 1917; Arch. Int. Med., Vol xxii, p. 466, 1918; Am. Jour. Med. Sci., Vol. clvii, p. 409, 1919.
[2] Uhlenhut: Exp. on Animals, etc., Deut. med. Woch., 1900.
Michalis and Oppenheimer: Arch. f. Anat. u. Phys., 1902, Sup.
[3] Schloss and Worthen: Am. Jour. Dis. Child, Vol. xi, p. 342, 1916.
[4] Baker: Am. Jour. Dis. Child., Vol. xix, pp. 114-118, 1920.

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OBSERVATIONS OF AN ANESTHETIST.

By Boris Rapoport, M.D., Boston,

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There was a time when the administration of an anesthetic was not held to be much of an art and almost anybody was considered fit to render a patient unconscious for operation. The surgeon did not hesitate to allow a nurse or a medical student inexperienced in anesthesia to etherize for him, and many a layman will boast of having etherized his wife while the doctor performed an instrumental delivery. In busy hospitals, an orderly with an ether soaked cone and a strong hand would knock the patient unconscious, and the only answer to the patient's protest was a few more strong hands pinning him forcibly to the table.

Happily times have changed, and not only has the value of the skilful anesthetist become recognized by the profession, but the public also has become educated to the point where they demand special training of the physician who is to anesthetize them. To the patient the unpleasant part of the procedure is the induction of the anesthesia, which he dreads often more than the operation itself. It is therefore no wonder that specialists in anesthesia make a great appeal.

The value of a skilful anesthetist has so demonstrated itself that at the present time there is no well established hospital in this part of the country without one or more anesthetists on its staff, and there is no active surgeon who has not attached to his operating team some especially trained anesthetist. Not only is sound training in the administration of an anesthetic essential, but good judgment must be exercised in selecting the anesthetic for the particular patient. It is therefore safe to assume that anesthesia has become a well recognized specialty.

From this point of view I have kept accurate records of my cases at the Beth Israel Hospital in the hope that by study and comparison I might be able not only to improve my own knowledge and technique, but also to offer some suggestions of value to others.

During the year 1919 there were performed at the Beth Israel Hospital three hundred and ninety-nine major operations. Of that number ninety-one were anesthetized by different members of the staff, and eight by Dr. A. W. Dodge, who is the consultant anesthetist of the hospital. Two hundred were done by myself, and the rest by internes of the hospital, under my supervision. I shall report only on my own cases and those of the internes, altogether three hundred cases. The record form that we employ at the hospital is complete, as well for the preliminary examination as for the anesthetic period and the complications.

The ages of the patients varied from two years to eighty-four. The average age was thirty-six. The operations were chiefly abdominal, but there were a large number of pelvic cases and quite a few prostates. We have no out-patient department and therefore there is no minor surgery. The longest anesthetic time in this series was three and one-half hours. Of all the three hundred cases there was no fatality directly due to the anesthetic.

The methods of anesthesia were as follows: 201, straight ether; 74, gas induction followed by ether; 12, gas-oxygen; 10, spiral analgesia; and 3, local, assisted by ether.

I have divided my cases into four classes, and under "Comment on Anesthesia," I noted on the ether chart: for first class, "Anesthesia very successful"; second class, "Anesthesia successful"; third class, "Anesthesia poor"; fourth class, "Anesthesia very poor." If a patient went under the anesthetic smoothly without vomiting or struggling, was well relaxed for the operation, had good color all through, came out with a good slow pulse and only vomited once or twice soon after the operation, my comment was, "Anesthesia very successful." Should the patient vomit at the time of induction or be poorly relaxed at any time during the operation, or should he be slightly cyanotic, the comment was "Anesthesia successful." If, on the other hand, I had great difficulty in getting the patient to breathe right and if he had a poor color and was not well relaxed, my remark was, "Anesthesia poor." Should the patient stop breathing at any time, requiring artificial means of resuscitation, such a case I designated as "Anesthesia very poor."

Of the two hundred and one cases of straight ether one hundred and thirty-two, or 65%, were of the first class; fifty-six, or 28%, were of the second class; ten, or 5%, were of the third class; while three cases, or 1.5%, were in the fourth class.

An entirely different picture is presented by the cases where gas was used for induction. Of the seventy-four such cases, sixty, or 81%, were in class one; twelve, or 16%, were in class two; while there was only one each for the last two classes. The advantage of gas as a preliminary to ether anesthesia can readily be seen by comparing these figures.

Of the twelve cases of gas-oxygen, eight were in class one, three in class two, and one in class three. Of the three cases of local, assisted by ether, two were in class one, and one in class three. Of the ten cases of spinal, all were in class one.

Since January 1, 1920, our series of cases of spinal analgesia has increased considerably. I shall have more to say on this subject at a future time, when the number of cases will be large enough to draw correct conclusions. As a passing word I wish to state that for the aged and infirm, or those afflicted with disease of the lungs, heart, or kidneys, we have found spinal analgesia to be the anesthetic of choice.

In this series of three hundred cases there were four complications which were directly due to the anesthetic; one lobar pneumonia, one bronchopneumonia, one lung abscess, and one parotitis due to pressure on the parotid gland while trying to keep the lower jaw forward. There were four cases of mild conjunctivitis which cleared in a few days under treatment.

With reference to the two cases of pneumonia, I believe there were other contributing factors beside the anesthetic, as for instance in the case of a woman who was coughing before operation and who on the third day developed lobar pneumonia, affecting the lower lobe of the right lung. She was operated upon as an emergency and had the gall bladder removed. It is possible that on account of pain in the incision and pressure of the wick directly under the liver, this rather obese patient could not inspire deeply with her right lung. The consequence was a congestion and a clogging up of the aveoli with a resultant pneumonia.

Altogether there were four patients who stopped breathing and became cyanosed during the operation. I tried to determine the cause for the accident in each case, but was unable to discover any in two cases. In one case the patient was over-etherized, as could be determined by the markedly dilated and fixed pupils. The fourth case is worth describing in detail. This was a man of about forty-three, who was to be operated on for inguinal hernia. He was a mason by trade, and probably alcoholic. This was a case of straight ether. His aversion to the anesthetic was manifested by general twitching and stiffening of the body, what is termed an "ether clonus." His body shivered as in an ague, and there was a peculiar twitching of the muscles of his arms, legs and face. His color was poor from the start, although he took fairly deep breaths and there was no obstruction to respiration. I began to push the ether so that his pupils became widely dilated; but the more ether I gave him, the more his body shook, and it did not stop even after twenty minutes had elapsed. I then decided to use a little chloroform which I poured on the cone by the drop method. After I used about one drachm of chloroform, the twitching stopped, and I wheeled the patient into the operating room. I continued the ether slowly. After the surgeon made the incision, before he was ready to expose the sac, I noticed that the patient was getting blue. I immediately stopped the ether. The patient in the meantime stopped breathing entirely and his pulse was not perceptible at the wrist. I ordered an ampule of camphor-in-oil and pulled his tongue out. This did not improve his condition. I then resorted to artificial respiration, and gradually he began to come back. The operation was completed, but the patient remained cyanosed and rigid throughout.

The accident in this case, I thought, was caused by the chloroform. But here I wish to remark that this patient did not have any preliminary medication of morphine and atropin. Had he received the preliminary hypodermic, he perhaps would not have come to all this trouble.

I have had considerable difficulty in trying to establish from my records a standard for the pulse and respiration under anesthesia. Here I was confronted with a conglomeration of figures which could not determine any definite law as far as the anesthetic is concerned. I found the widest variations, according to the length of the anesthesia, its depth, preliminary medication, the character of the patient, and the the severity of the operation. As a rule, a prolonged anesthesia raises the pulse and respiration; the same is true of rough manipulations by the surgeon. On the other hand, some nervous patients who have a pulse of 120 before operation come down from the operating room with a pulse of about 70-80 after operation.

In regard to morphine and atropin as a preliminary to anesthesia, I wish to state that although it should never be used as a routine, in the majority of cases it is of great benefit to the patient as well as the anesthetist. It should not be used in the aged, debilitated, and the very young. But, on the other hand, it is of great advantage to the shocked, highly nervous, asthmatics, and robust. It lessens shock, it diminishes the time of induction, and less ether is required to keep the patient well relaxed for the operation.

So much for the preliminary treatment. Now, as to induction, the use of gas as a preliminary to ether is one of the greatest additions to the field of anesthesia. Not only do we save time at the induction, but we do away with any struggling or opposition on the part of the patient in the etherizing room. It is pleasant to take, and once the patient is rendered unconscious by the gas, we can easily switch over to ether without the patient recognizing the change. It also does away with the gagging which occasionally occurs at the time of induction.

In conclusion I wish to give a few practical points as observed from my own experience. Above all, I cannot emphasize too strongly the importance of the utmost concentration of the mind of the anesthetist on his patient. He must be on the alert all the time. The patient's color, breathing, pulse, and the size of his pupils are things that the anesthetist has to be posted on at every moment of the operation. He must also be familiar with all kinds of operations and their different stages. An operation on the gall bladder or a pelvic exploration requires a deeper anesthesia than an appendectomy or an umbilical hernia. Moreover, the different stages of any one operation require varying depths of anesthesia.

It should always be the aim of the anesthetist to use as little of the anesthetic as possible. He must be able to tell at a glance how deep the patient is anesthetized, and for this purpose I know of nothing more instructive than the respiration. It is impossible for me to describe the different characteristics of respiration by which I am able to tell the depth of the anesthesia. This cannot be learned out of a book; one must acquire it by experience.

Another point which is of great importance is the color of the patient. One must never be satisfied with a poor color unless the patient is suffering from asthma. In about 99% of cases cyanosis means either too much ether or mechanical obstruction of the respiratory tract. Be prepared with a nasal tube for every patient who has a short neck, and use it in every case where you have trouble with the patient's breathing. It saves you the necessity of continually holding forward the patient's jaw. Have the head and shoulders of asthmatics higher than the rest of the body. Keep the head of short-necked people in extension.

If the surgeon remarks that the patient is rigid, never, in the desire to quickly deepen the anesthesia, pour an excess of ether on the cone all at once. The concentrated vapor inhibits the patient's respiration with the result that less ether gets into the circulation and he is likely to gag and remain rigid. It must be done slowly at the expense of a little time. If the anesthesia is so deep that the breathing becomes slow and shallow, it means that the patient is approaching a stage when he will stop breathing altogether. Stop the ether at once and wait until the respiration becomes deeper and more frequent.

There is one more important thing which contributes towards good anesthesia and which is frequently overlooked. That is the gaining of the patient's confidence. Don't enter the etherizing room and without preliminaries of any kind start the anesthetic. First get into a conversation with your patient, become acquainted, listen to his heart and count his pulse rate. Show the patient that you are there for his interest and encourage and assure him that everything will be all right. This will overcome his fright and inspire confidence, with the result that he will take the anesthetic more smoothly and will be better relaxed for the operation.

Last of all, don't consider your job finished when the surgeon gets through with the operation. You must see the patient safely in bed. During the recovery he may vomit and aspirate some of the vomitus, which may result in pneumonia or lung abscess, or his tongue may drop backward, causing asphyxia. You should see that all the moisture is wiped off his body and that he is well covered before he leaves the warm operating room for colder corridors and elevators. When put to bed, see that his head is placed in the position in which breathing is accomplished with the least exertion.

The source of success lies in paying attention to a multitude of details which, if kept in mind, will insure satisfaction and safety.

LONGINGS OF THE PREGNANT, VIEWED IN LIGHT FROM THE EAST.

By Alfred Ela, Boston.

Sufficient warrant for taking up this subject is given by the point made in a discussion in 1918 before the Pittsburgh Academy of Medicine,[47] to wit:[39] "It is important that the physician should be versed in obstetrical superstitions in order that he may be in position to deny them and thus assist the patient." Prominent among such superstitions are the longings[40] (cravings, or peculiar yearnings) of pregnant women. From early times[24] these longings have been divided (especially as to abnormal appetites) into (a) the natural and healthy, and (b) the unnatural, revolting or pathological. The latter division seems the only one set out in the textbooks, and apparently it is there treated sufficiently; accordingly, the first class only needs to be considered here. Giles,[23] while ascribing a large portion of the "natural" cravings to superstitious grounds, attempted to account for part as fulfilling some physiological want in food or drink; his opinion, however, can be looked at askance, for he had not yet rid himself of the popular belief that non-satisfaction of longings of that kind might result in a "longing-mark"[40] or birth-mark; this belief goes further, *viz.*, that if such a mark does not appear, the mark has 'fallen on the child,[24, 26] so that it must be fed with the food longed for, however dangerous and inappropriate to its age. The hazard of inflicting birthmarks was a chief instrument in well-meant pressure on a primipara[2, 3] who declined to have longings, according to her sprightly and detailed account sketched hereinafter; suffice it here to say that she was hounded by her solicitous family to have some longings, till she finally was converted into a firm belief in them and that non-satisfaction of them was followed by birthmarks; so she, after account of her own happy delivery, alleges[1] the following instance in the family of de Buffon, a sceptic thereon, who found his mistake to his sorrow. When the pregnant Mme. de Buffon's cravings were for strawberries, then out of season, he made her (a martyr to an experiment) gaze daily on green ones ripening all too slowly under glass; their child was born with a fine strawberry upon an eyelid, according to a prelate's lively report to Bonaparte, then First Consul and interested in such matters.

While this venerable fallacy of birthmarks or maternal impressions is called "hopeless,"[48] it has been attempted to be explained[45] on the rational ground that the foetus has made the mother sensitive to certain impressions, and not *vice versa*; but in this (as in other articles[37] on the results of the internal secretions) the verdict runs ahead of the evidence. That mental troubles (such as certain classes of longings) are connected with the endocrine system is extremely probable, but this remains to be worked out.[29] The problem of the physiological part of the origin of longings, cannot now be solved by ascription alone to alterations in the secretions of the alimentary tract due to pregnancy, as was thought a few years ago;[8] but the legal necessity of the woman's keeping control of the part within her power, has (with the decrease in belief in the superstition that injury results from denying longings) become so evident that few or no cases alleging longings are to be found in recent court decisions,[7] though prosecutions, for larceny, etc., by the pregnant, were formerly rather common.[38]

Most of the above, however, with the finedrawn division into classes[20] by the authors cited and referred to, may be rendered obsolete by the recent investigations into hysteria which may well include all classes of longings among its symptoms. Under the newest definition:[30, 32, 35] "Hysteria is a condition in which symptoms are present which have been produced by suggestion and are curable by psychotherapy," may come the Duchess d'Abrantès' personal experiences[2, 3] which are related so graphically (pleasure and profit being promised anyone interested who will read the original) that her account, however untechnical in language, might almost serve as a clinical report of a case of "suggestion." Briefly, her first pregnancy had its agonies aggravated by insistent demands of her mother, mother-in-law, and husband that she have some longing, but this she was unable for a long time to evolve. Finally another member of the family joined the chorus, with so many dreadful details of monsters and infants with birthmarks produced by those who had not declared or satisfied longings, that "it would have needed a head stronger than that of a Christian woman carrying her child according to the will of God, not to have surrendered to this line formed by the most true and tender interest."[4] At last she succeeded in achieving a longing for a pineapple, a fruit which she (even in her position in society) had never seen, which then was far more rare than now, and at that date was out of season. She ended by persuading herself that she must either satisfy this new-found desire or die from being unable to eat anything unless this first,[5] and thus brought herself within sight of that starvation which Hurst thinks the real cause of the symptoms hitherto regarded as the toxemias of pregnancy.[31] Fortunately a pineapple was eventually procured, but, being advised not to taste of it till the next day, she caressed it on its stand all night; thereafter being daintily served with it by her beloved husband, she suddenly acquired such a repugnance to it[6] that neither then nor during the rest of her lifetime was she willing to eat of this fruit, though delighting in pineapple in other forms. Was this unconscious autopsychotherapy (spontaneous revolt against the suggestion forced upon her), followed by a hysterical survival?[35] This case was of one unusually resistant to pressure made with the best intentions, while similar "suggestion" oftentimes may be malevolent or thoughtless, being made by women who "seem to take peculiar delight in telling all the horrible things they can think of to their pregnant friends,"[49] who are at that time "unduly impressionable." This leads to what is miscalled "autosuggestion"[25] but is really suggestion from environmental pressure. How effective such pressure may become is shown by longings for unwonted food felt, among certain tribes, even by the husbands[43] (and likewise, momentarily, by General Junot, the husband of the Duchess).[5] Such a longing is in strict analogy with the much discussed "couvade," wherein many of the discomfortures of childbirth are suffered by the father who receives most of the care otherwise given to the mother. An article on this subject, based on a clinical case in New York State, has been for two years under way till it was halted because my structure would not hold together—a defect apparently obviated by the new version of hysteria which supplies the missing keystone to the arch. Autopsychotherapy, on the other hand, seems to be acquired by women in the course of repeated childbirths so that, for instance, a table made up of 300 cases[26] showed that the heavy percentage of married primiparae who manifested longings, evidently as having been taught that this was the proper thing for them to have, steadily decreased almost to the vanishing point after many confinements. This is parallel to the similar cure[46] of paralyzed patients (made by themselves, when perhaps incurable while relying upon the aid of others without giving their own assistance); this cure was through their making instinctive movements largely induced by the buoyancy (physical and mental) found in the swimming bath, of which the therapeutic use in this connection has been lately learned and which has proved of incalculable value.[46]

Which side of the shield bears the true blazon must be adjudged by a more competent investigator. It is hoped that this determination will be incidental to the intensive study of the unique psychic state of pregnant women, the lack of which has already been lamented.[27] Meanwhile, great present interest is excited by the flood of unexpected light thrown upon the subject[9] by a marshaling of material from the East, derived from a civilization unbroken and so far older than ours, and of a people perhaps more acute mentally than are Occidentals. The material from the East, as thus selected, does not pretend to be scientific, but it is ample in volume because Hindu women evidently have longings much more urgent and universal[12] than are found in the West. These longings are fostered by the seeming necessity of yielding to them, since they are thought to originate,[11] not with the woman herself, but with the child she carries, whose welfare (like that of the community) would be imperilled if its wishes were thwarted. This theory of "two-heartedness,"[11] as it is called, differs utterly from the Greco-Roman doctrine that the child had no separate existence till it was severed from its mother; further researches (regarding the reciprocal interchanges of religious ideas between India and the early Roman Empire) may show this theory as the real source of the Church's doctrines on the sinfulness of abortion; but a discussion of this side issue must be postponed.

While in the West most of the "evidence"[36, 41, 42, 44] is untrustworthy, sporadic and unsystematized, "Hindu schematism allows nothing in nature or the mind, however unimportant or indecent it may seem to a sophisticated Western soul, to pass without formal statement and discussion."[10] The unconscious manifestation of this tendency by the fictionists, as to Dohada or longings, "pervading poetry and fiction all the way from Ceylon to Tibet,"[10] has in the last-cited article been reduced to form under six rubrics, to wit:[13]

"I. Dohada either directly injures the husband, or impels some act on his part which involves danger or contumely.

"II. Dohada prompts the husband to deeds of heroism, superior skill, wisdom or shrewdness.

"III. Dohada takes the form of pious acts or pious aspirations.

"IV. Dohada is used as an ornamental incident, not influencing the main events of a story.

"V. Dohada is feigned by the woman, in order that she may accomplish some purpose or gratify some desire.

"VI. Dohada is obviated by tricking the woman into the belief that her desire is being fulfilled."

The space available here will not permit giving details under these rubrics except by a few brief comparisons; thus, as to the first rubric, if one had a patient[22] who, like a very vampire, sucked the blood of her sleeping husband, it might be profitable to adduce the case of a king who willingly gave of his blood to gratify a foetus who he knew would finally slay him.[14] If she had a yearning even to eat his flesh,[21, 60] Hindu instances showed the woman satisfied, though she was tricked.[15, 16] Rubric III has many examples[17] which can scarcely be matched in the less pious West, but which might be paralleled by many a Christian saint having been sanctified *in utero matris*. Under IV, two of the women[18] gratified their longing to roam aloft in an airship, a longing which can be matched by the similar "symbols" in the desire-dreams collected by our psychoanalysts. The whole matter of Dohada is pervaded by evidences of infinite solicitude in pre-natal care (for instance as to diet).[19] Still further afield, in the frequent themes of the Hindu poets[10, 12] that the blossoming and the fruiting of various trees are dependent upon the gratification of their peculiar longings, are even much-needed variants for our poets of Spring.

A summary of the present situation may be made by stating that whether the origin of longings is physiological, or hysterical in its new meaning, must await someone's intensive study of the psychic state of pregnant women; meanwhile attention is called to Professor Bloomfield's recent digest of many aspects of the question in the literature of India.

REFERENCES.

[1] d'Abrantès: Mémoires de la duchesse (1835 edition), Vol. iv, pp. 186, 187.
[2] *Ditto*, Vol. iv, pp. 87-93.
[3] Same matter quoted, 1897, Chronique Médicale, Vol. iv, pp. 673-677.
[4] *Ditto*, at p. 674.
[5] *Ditto*, at p. 675.
[6] *Ditto*, at p. 677.
[7] Bischoff, E.: 1908, Archiv. für Kriminal-Anthropologie und Kriminalistik, Vol. xxix, at pp. 115, 116: "Der Geisteszustand der Schwangeren und Gebärenden."
[8] *Ditto*, at p. 115.
[9] Bloomfield, M.: February, 1920, Journal of the American Oriental Society, Vol. xl, pp. 1-24. "The Dohada or Craving of Pregnant Women: a Motif of Hindu Fiction."
[10] *Ditto*, at p. 1.
[11] *Ditto*, at p. 2.
[12] *Ditto*, at p. 4.
[13] *Ditto*, at pp. 5, 6.
[14] *Ditto*, at pp. 6, 7.
[15] *Ditto*, at p. 7.
[16] *Ditto*, at pp. 8, 9.
[17] *Ditto*, at pp. 16-18.
[18] *Ditto*, at pp. 18, 19.
[19] *Ditto*, at p. 24, footnote 40.
[20] Cumston, C. G.: 1903, American Journal of Obstetrics, Vol. xlviii, at pp. 806 *et seq.*: "Pregnancy and Crime. A Medico-Legal Study."
[21] *Ditto*, at pp. 809, 810.
[22] Fournier: Dictionnaire des Sciences Médicales, Vol. xiv, p. 624.
[23] Giles, A.: 1893, Transactions of the Obstetrical Society of London, Vol. xxxv, pp. 242-249: "The Longings of Pregnant Women."
[24] *Ditto*, at p. 243.
[25] *Ditto*, at pp. 246, 249.
[26] *Ditto*, at p. 247.
[27] Hall, G. S.: 1914-1915, Journal of Religious Psychology, Vol. vii, at p. 446.
[28] Hammar, J. A.: 1920, Endocrinology, Vol. iv, pp. 37-46: "A Plea for Systematic Research Work in the Anatomy, Normal and Morbid, of the Endocrine System.
[29] *Ditto*, at pp. 44, 45.
[30] Hurst, A. F.: 1919, in Contributions to Medical and Biological Research Dedicated to Sir William Osler, Vol. i, at p. 600: "What the War Has Taught Us about Hysteria."
[31] *Ditto*, at p. 614.
[32] Hurst, A. F.: 1918, Seale Hayne Neurological Studies, Vol. i, pp. 106-110: "Nature of Hysteria and Hysterical Symptoms."
[33] *Ditto*, at p. 109.
[34] Hurst, A. F., *et al.*: December, 1919, Proceedings of the Royal Society of Medicine, Vol. xiii, Section of Otology, pp. 8-11: "Hysterical Deaf-mutism of Eighteen Months' Duration."
[35] *Ditto*, at p. 11.
[36] L'Intermédiaire des Chercheurs et des Curieux, *passim*.
[37] For instance: Keith, A.: 1919, ii, Lancet, pp. 553-556: "Differentiation of Mankind into Racial Types."
[38] See (what time has not dulled): von Krafft-Ebing, R.: 1868 Friedreich's Blätter für gerichtliche Medicin, Vol. xix, pp. 52-61: "Die Gelüste der Schwangern."
[39] Miller, H. A.: April, 1918, Pennsylvania Medical Journal, Vol. xxi, at p. 480.
[40] New English Dictionary, Vol. vi, p. 418 has historical examples of the use of word.
[41] Notes and Queries (London) *passim*.
[42] Ploss-Bartels: 1908 edition, Das Weib, Vol. i, pp. 916-920
[43] *Ditto*, Vol. i, at p. 920.
[44] Ploss-Renz: 1911 edition Das Kind, Vol. i, pp. 43, 44.
[45] Rockingham: 1917 Notes and Queries, 12th Series, Vol. iii, pp. 17, 18: "Mother and Child."
[46] Sargent, P.: December, 1919, Proceedings of the Royal Society of Medicine, Vol. xiii, Section of Neurology, pp. 17-27, near end: "Some Lessons of the War Applied to Spinal Surgery."
[47] Titus, P.: April, 1918, Pennsylvania Medical Journal, Vol. xxi, pp. 478-480: "Obstetrical Superstitions."
[48] *Ditto*, at p. 479.
[49] *Ditto*, at p. 480.
[50] Witkowski, G-J-A.: Histoire des Accouchements, p. 170.

Medical Progress

REPORT ON PSYCHIATRY.*

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PSYCHIATRY AS AN AID TO INDUSTRIAL EFFICIENCY.

Ball[1] shows the great value of mental hygiene in the industries. He bases his conclusions on the results of visits to large industrial plants in various parts of the country, interviews with managers and men, and much detailed study of individual workmen. He believes in close relationship between employer and employee and the stabilization of industry by practical scientific selection of human material, creating trust, confidence and coöperation. To this end it is necessary to study the individual as to his physical, nervous and mental fitness for his job, and to ascertain his special abilities and disabilities. Prophylactic measures adopted now, with the sympathetic coöperation of labor and industrial leaders, will prevent the disease of inefficiency from making further inroads upon either capital or labor, stabilizing and unifying both. The present industrial research—not only scientific in aim, but practically humane and economic—is the preliminary stage of a work which, he believes, has not previously been attempted.

The methods of procedure include (1) general medical, (2) neurological, (3) psychiatrical, (4) psychological, and (5) social, since the scheme involves the coördination of all scientific aids in industrial examinations. Such a scheme could be put into operation in the employment bureau of industrial organization, and also used to ascertain the physical, nervous, and mental equipment of workers already employed.

As an example, the results of an examination of fifty-seven employees of an industrial company is presented shortly before a strike occurred. All the strikers were found to have something wrong with them from a nervous or mental standpoint, nearly all having a psychopathic history. Such an examination, it is claimed, is of value in predetermining conduct and enabling the employer to remedy conditions likely to cause trouble.

He concludes that it is desirable, even from an economic point of view, to establish medico-psychological laboratories as the principal de-

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partment of employment bureaus of every large industrial organization, and further advocates the establishment of a central employment clearing house, with medico-psychological laboratory to act for groups of industrial organizations too small to economically conduct their own bureaus. There would be a representation of labor in all such bureaus, which would react to the benefit alike of the individual, the industrial organizations, the labor organization and the community.

Southard,[2] commenting on Ball's statement, adds in a comprehensive paper on the subject, that of course no mental hygienist would assert that all or many strikes could be prevented by advance studies of workmen. In fact, Ball specifically says that "it could not be concluded from this or any other examination that all strikers, whether agitators or not, are psychopaths; examination does show that the agitators in this group were the self-assertive ones and the ones grading the highest in intelligence, the others simply followed the leader." Nobody needs to say that there are not strikes and other labor troubles due to mental disease or character defect, either in the employment managers and mind executives or in the plant owners themselves. Some of the very conditions which make for self-assertiveness and success of a sort amongst labor leaders are conditions which make for the success of financial magnates and captains of industry. Nobody claims 100 per cent. efficiency for any of these or kindred proposals.

Cobb[3] sums up the problem of industrial psychiatry as follows:

Prophylaxis of mental breakdowns by adapting the worker to his environments, and eliminating causes of discontent.

Treating psychiatric cases when they arise in a rational way according to the facts of each case, and considering as psychiatric phenomena many forms of behavior that until recently have been given unsympathetic names, *e.g.*, "the groucher," "the kicker," "the trouble maker," and "the hobo."

As conditions are at present, a reasonable application of psychiatry to industry would seem to be the following:

1. Physical examination of all applicants for work.

2. Mental examination by (a) a period of training and observation, or (b) through mental tests.

3. Keeping in personal touch with employees' individual problems by means of (a) good foremen, (b) a system for watching individual efficiency, or (c) a sympathetic staff with a psychiatric point of view in the employment management office, thus salvaging the men who might otherwise be fired.

4. Training the industrial physician to a knowledge of how human nature is constituted, not in conventional terms, but in the light of a dynamic and living psychology that considers the behavior of human beings in terms of instinctive sources of energy, integrated into motives, these motives needing outlet through energy transformation into satisfactory activity.

PROMOTION OF MENTAL HYGIENE IN UNIVERSITIES.

Campbell[4] emphasizes the following points:

1. The lack of guidance in childhood, adolescence, and early adult life is one of the causes of the development in the adult of a great variety of nervous and mental disorders, varying from frequent headaches, peculiar mannerisms, anomalies of mood, odd interests and enthusiasms, to disorders of conduct sufficiently pronounced to be called insanity.

2. Those primarily responsible for giving the necessary guidance are the parents and teachers, the family physician and the religious adviser.

3. The parents cannot easily be reached directly.

4. The teachers can take up the problem efficiently only when their own education deals frankly with many problems of life which are too frequently ignored although they are of fundamental importance.

A course of psychology for teachers is quite inadequate unless it deals thoroughly with the basal forces of human nature, with the instinctive roots of conduct, and with the various surface phenomena which crop above the surface when the instinctive life of the individual is being badly managed.

5. The student at the university should not only have the opportunity of developing his intellectual efficiency and of casually deriving personal benefit from frank intercourse with his fellows; he should in every case have a

course of instruction dealing with the fundamental problems of human life, and in this department should find a suitable opportunity for facing his own personal needs and difficulties, and placing his intellectual development on the sound basis of a healthy and clearly understood instinctive life.

6. No medical college is fulfilling its responsibility toward the community unless it provides its students with a satisfactory opportunity of studying mental disorders in their earliest phases, and trains physicians to recognize early and to regard seriously the symptoms of disordered balance in the child and in the adult.

THE MENTAL SIDE OF VASCULAR HYPERTENSION.

Moschowitz,[5] without attempting to determine the "why" of hypertension, has ventured to describe a type of person, conforming to certain physical and psychic complexes, in whom hypertension is very likely to occur. Here is his picture:

> The patients are overweight and sometimes even obese. The neck is short, the muscles are soft, their bodily movements are sluggish, their carriage and walk are ungraceful and they lack the spring and *elan* of the former athlete. Physically, these people are tense; they pursue their vocation with tremendous seriousness and worry over trivialities. Phlegm and hypertension are, in my experience, antagonistic. Furthermore, these individuals have narrow intellectual horizons. Their interest in anything outside of their business is desultory. They have no hobbies.

The prototype of the candidate for hypertension whom Moschowitz has thus cleverly portrayed shows his most conspicuous mental incapacity in an inability to play. If it shall prove of value in prophylaxis to know the type, we must regard him, according to Moschowitz, as the antithesis of the child, both in mind and in spirit. If the psychic, as well as the physical, takes a part in the development of hypertension, we may well advocate, vigorously and often, a large element of play in the routine of those who conform to the type. If age is not merely a matter of years, we must keep alive that spirit of childhood which is not "blighted by the premature struggle for existence or the gloom of a depressing environment." In anticipation of the danger of hypertension we must put back play into the lives of those who know only adult work; for in a well balanced life the spirit of the child, with its humor, imagination, its enthusiasm for sport and love of vacations, furnishes that which "neutralizes the corroding acid of the 'fret and fever' in our lives."

SUPRARENAL INSUFFICIENCY AS A FACTOR IN PSYCHOSES.

Rossi[6] has encountered nine cases in which a manic-depressive psychosis developed during the weakness following influenza. He ascribes it to the suprarenal insufficiency which was manifest. This assumption was confirmed by evidences of suprarenal insufficiency in six other patients with manic-depressive psychoses who had not had influenza. It was placed on a still more solid basis by the efficacy of suprarenal treatment. The beneficial action of epinephrin in these cases seems to lift the veil of mystery from the manic-depressive psychoses, and expose their origin and means to treat them.

INTRASPINAL TREATMENT OF SYPHILITIC DISEASES OF THE CENTRAL NERVOUS SYSTEM.

Lafora[7] now has a record of fifteen cases of general paralysis in which the manifestations of the disease have retrogressed under his treatment, not only the symptoms but the laboratory findings in the lumbar puncture fluid as well. The latter does not occur with the spontaneous remissions in general paralysis. The secret of success, he says, is to diagnose the disease in its earliest phases, before it has been under way for more than six or eight months. This is possible, he explains, by the laboratory findings in the cerebrospinal fluid and blood. Two of these laboratory reactions are characteristic of general paralysis alone, namely, the Wassermann test applied with only 0.2 c.c. of the cerebrospinal fluid, and the special curve of the colloidal gold test, the figure being very different from the figure with other forms of cerebrospinal syphilis. With these two reactions, general paralysis can be detected even before any clinical symptoms become manifest. The intraspinal treatment may arrest it for years, and perhaps permanently. It must be kept up possibly for a year and a half, that is, until the five laboratory reactions are permanently negative. Nine or ten months sufficed in some of his cases.

The same treatment proved almost always effectual in eight cases of tabes, the subjective symptoms rapidly subsiding, with some of the objective symptoms. It also proved the most effectual means to arrest progressive amaurosis, and in syphilitic radiculitis it suppressed the pains much better than intravenous treatment. He gives intravenous treatment in the intervals, testing the susceptibility by gradual therapeutic preparation, both intraspinally and by the vein, as he describes in minute detail. His list includes also four cases of syphilitic spinal and two of cerebral paraplegia. He uses the autoserum prepared *in vitro* by the Byrnes and Ogilvie methods. Four or five injections are made by the vein at intervals of from four to six days, 0.01 gm. of mercury and arsphenamin. The first intraspinal injection was made with arsphenamized serum, never more than 2 or 3 mg., and the maximal dose ever reached was 4 mg. of mercuric chlorid or 7 mg. of (French) neo-arsphenamin. The intervals were from twenty to forty days while the injections by the vein were made about twice a weel alternating the mercury with the neo-arsphenamin and suspending for two or three weeks at the end of six months. The efficacy of this treatment is extremely manifest in syphilitic processes which have not yet invaded the deep parenchyma of the nervous system, and meningeal lesions are only just beginning around the nerve lesions.

ORGANIC BASIS FOR DEMENTIA PRAECOX.

C. von Monakow and S. Kitaboyashasi,[8] in pathological examinations of twelve cases of dementia praecox, found abnormalities in the choroid plexus of every case. The lesions included hyperemia, scattered degeneration of the villi, amyloid degeneration of the connective tissue, collection of colloid masses within the plexus and interpapillary exudation. In other psychoses marked by abnormal sensations, delirium, delusions and hallucinations, similar changes were seen but they were of less intensity. In cases of chronic alcoholism and senility only hyalin degeneration and atrophy of the villi were found. Von Monakow believes that it is the function of the choroid plexus to neutralize, detoxicate or transmit the total products of internal secretion so far as these substances have to do with brain function.

PATHOLOGIC CHANGES IN TESTES IN MENTAL DISEASES.

Macroscopically, sections of fresh or hardened testes revealed pathologic changes in a majority of the asylum cases studied by Mott;[9] the converse was noticeable in the adult hospital cases. In the asylum cases the most marked deviation from the normal condition was found in two groups of cases, namely, (1) general paralysis, (2) dementia praecox. There was no correlation between the macroscopic cortical changes in the brain in general paralysis and the morbid changes in the testes. As a general rule, the degree of morbid macroscopic changes of the testes in dementia praecox conformed to the duration of the mental disease and the clinical signs and symptoms of the mental decadence rather than to any obvious macroscopic changes or defects in the brain. In general paralysis, the dementia corresponds in great measure to the degree of cortical destruction; nevertheless, there is no correlation in this disease between the brain atrophy and the testicular atrophy. With the exception of cases of senile dementia and congenital imbecility with epilepsy, the testes in other fatal asylum cases did not, as a rule, show any marked departure from the normal, for example, cases of epileptic insanity, Korsakoff psychosis, paranoia and manic depressive insanity.

"PROGRESSIVE PARALYSIS."

The investigations of Jahnel,[10] which show that ordinarily there were large numbers of spirochetes present in the cerebral cortex of paralytics who had died during an attack, are confirmed by the researches of Jakob and Hermel. The findings of the latter investigators go to show that the exacerbations of the disease, considered from a parasitologic standpoint, constitute very important episodes in the course of progressive paralysis. As the most important results of his investigation, Jakob mentions finding that the mental and motor exacerbations are associated with regressive and progressive phenomena in the fundamental and essential part of the nerve fibres (the axis cylinder), and with severe inflammatory processes in the connective tissue, and infiltration of the pia, the vessels of the cortex and medulla; infiltration of cellular elements into the nerve tissue; collections of lymphocytes; encephalitic processes; occurrence of gummatous changes in the vessel walls, and of miliary gummata in the cerebral cortex. Also endarterial proliferation processes in the vessels of the cortex were noted.

Jakob looks on his histologic investigations as furnishing further proof of the correctness of Jahnel's view that the exacerbations of the disease coincide with a vigorous and extensive multiplication of the spirochetes. So much, Jakob thinks, must be taken as certain, that in progressive paralysis living spirochetes exert a direct effect on the brain.

It is still a question why paralysis develops in certain syphilitics and not in others, although the observation that it is the syphilitics with very slight defense reactions in whom paralysis appears seems to point toward a solution. Further light on the question is thrown by the observations of Erb and of Fournier that those in whom the infection takes a mild course and who present no specific skin lesions in the secondary stage are more prone to paralysis than are those of whom the converse is true. Jakob's histologic data give the clue to treatment of progressive paralysis. Everything possible must be done to effect a cure of the syphilis, to destroy the remaining foci of spirochetes, and to enhance the production of antibodies. He reports that efforts in this latter line are now under way. He is injecting patients by the vein with inactivated serum from untreated patients in the secondary stage of syphilis with pronounced cutaneous manifestations of the disease, hoping thus to increase the supply of specific antibodies. He is also planning to use cultures of the spirochetes for a similar purpose.

MENTAL AND NERVOUS INJURIES.

Donoghue[11] emphasizes the need of calling to the assistance of the compensation boards men competent to diagnose and advise treatment in the psychoses, and through them to encourage the further standardization of this group of cases. The present method of handling them by exerting constant pressure from the insurance physician, insurance adjuster, or compensation commissioner is not always a success. Non-acceptable work forced on a man tends to develop in him the reaction against work. Forcing a high class man to sweep a floor may not be treatment; it may be the opposite. The difficulty of the administration of workmen's compensation by lay boards in this group of cases comes down to the unsurmountable fact that there is no specific treatment for hysteria. When a person presents himself he is coming more for relief than for monetary compensation.

INSANITY AND CRIMINAL RESPONSIBILITY.

A committee of the American Institute of Criminal Law and Criminality, upon Insanity and Criminal Responsibility recommends the adoption of a program for development directed towards the following ends:

1. That in all cases of felony or misdemeanor punishable by a prison sentence the question of responsibility be not submitted to the jury, which will thus be called upon to determine only that the offense was committed by the defendant.

2. That the disposition and treatment (including punishment) of all such misdemeanants and felons, *i.e.*, the sentence imposed, be based upon a study of the individual offender by properly qualified and impartial experts cooperating with the courts.

3. That provisions be made permitting the transfer of such misdemeanants and felons at any time after conviction from one institution to another affording a different kind of treatment upon the presentation of evidence of the needs for such action satisfactory to the court which passed sentence.

4. That no maximum term be set to any sentence.

5. That no parole or probation be granted without suitable psychiatric examination.

6. That in considering applications for pardons and commutation careful attention be given to reports of qualified experts showing the applicant's mental age and mental stability and that in drafting statutes determining or defining juvenile delinquency, mental age and mental stability, within reasonable limits, be regarded as of importance with the calendar age of the delinquent.

In view of the foregoing and as an initial step towards the ends stated, the committee submits the following resolution and urges its immediate adoption:

Resolved, That the several states be urged to make provision for the psychiatric examination, under conditions permitting prolonged observation when necessary, of all persons convicted of a felony, misdemeanor or other offense by properly qualified experts appointed to assist the court in reaching a decision as to the proper disposition and treatment of the offender.

The personnel of this committee was as follows: Victor P. Arnold (chairman), Judge of the Juvenile Court, Chicago; Dr. Hugh T. Patrick, Chicago. Dr. H. Douglas Singer, State Alienist, Kankakee, Ill.; Dr. Sidney Kuh, Chicago; Burdette G. Lewis, Commission on Charities and Corrections, Trenton, N. J.[12]

THE MENTAL DEFICIENCY OF PROSTITUTES.

One hundred and twenty-six women arrested for prostitution and similar offenses at Newport News, Va., were given Binet-Simon tests by Mertz,[13] the psychological examiner at the port of embarkation. The results showed that:

1. Fifty-three per cent. of the women had a mental age of 10 or under.

2. In addition, 15 per cent. of those who were not mentally deficient showed mental disorder.

3. Ten per cent. were so deficient as to warrant, under existing laws, segregation in an institution for feeble-minded.

4. Fifty per cent. of these women did not reach the fifth grade in school.

5. If we were seeking for a "type," we might say that the composite of the delinquent woman as found in Newport News would seem to be a woman of 19, slightly mentally deficient, with schooling to the fourth grade.

REFERENCES.

[1] Amer. Jour. of Insanity, April, 1919, Ball, Ju. Don.
[2] Industrial Management, February, 1920.
[3] Jour. Industrial Hygiene, Vol. i, No. 7.
[4] Jour. Mental Hygiene, April, 1919.
[5] Am. Jour. Med. Sci., 158, 668, November, 1919.
[6] Anales de la Facultad de Medicina, Montevideo, December, 1919, Vol. iv, No. 12.
[7] Révue Neurol., Paris, August, 1919, Vol. xxvi, No. 8.
[8] Schweiz. Archiv. f. Neurol. u. Psychiat., Vol. iv, 1919.
[9] Brit. Med. Jour., Nov. 22, 1919, Vol. ii, No. 3073.
[10] Deutsche medizinische Wochenschrift, Oct. 23, 1919, Vol. xlv, No. 13
[11] Modern Medicine, Chicago, December, 1919, Vol. i, No. 8.
[12] Jour. Am. Inst. Crim. Law. and Criminology, August, 1919.
[13] Jour. A. M. A., No. 22, Vol. lxxii.

Book Reviews.

Electric Ionization. By A. R. Friel, M.D., (Dub.)., F.R.C.S.I. New York: William Wood and Company. 1920.

A practical introduction to the use of electric ionization in medicine and surgery is presented in this small volume by Dr. Friel. The author has explained the general principles of ionization and described methods of utilizing electric currents in introducing drugs into the affected parts of the body for the treatment of disease. A detailed account of the equipment necessary has been given, with explanation of electrical terms, information in regard to available sources and regulation of current, methods of testing electrodes, and a list of solutions which should be kept in readiness in the ionization room. The effects of different ions on ankylosis, cerebral affections, and other conditions are discussed and illustrated by detailed accounts of experiments. Of particular value is the section of the book which mentions some of the conditions for which ionization has been found most useful and describes the technique suitable for applying it to different parts of the body. The author does not claim that ionization is a panacea, but states what reasonably can be expected from it. The treatment has been found to be especially beneficial in the treatment of many ailments whose manifestations are for the most part local and due in many cases to the inoculation of micro-organisms into some tissue or organ where secondary organisms find a footing and cause retardation or prevention of cure in the patient. The simultaneous employment of other agencies dealing with other factors of the condition is not discouraged. The book is well illustrated with diagrams and charts which will be found helpful in the successful practice of electric ionization.

Aids to the Analysis of Food and Drugs. By C. G. Moor, M.A., F.I.C., and William Partridge, F.I.C. Fourth Edition. New York: William Wood & Co. 1918.

The fourth edition of *Aids to the Analysis of Food and Drugs* analyzes the food and drugs which are most commonly sold to the public. Few of the methods of analysis here described are really new, although many processes have been added which have come into more general use since the publication of the third edition. The new regulations and recommendations issued by the Government and foods and adulterants of recent appearance are presented. In this edition, estimates of sulphates, benzoates, hydrogen peroxide, and other preservatives are given; the facing of grains, catalase in milk, and the Kirschner process are described. Fiehe's test for invert sugar, Evers' process for anarchidic acid, Tatlock and Thomson's process for caffeine, and the English fibre process have replaced some of the methods incorporated in previous editions. Other new sections deal with cider, the freezing-point of milk, milk enzymes, self-raising flour, the bleaching of flour, hardened oils, dirt in milk, and unsound fruit in jam. Poisonous metals are considered, together with means of determining traces of lead, arsenic, zinc, and copper. Wherever it has been possible, the alterations made necessary by war conditions in the composition of articles have been enumerated in the appendix.

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THURSDAY, NOVEMBER 11, 1920

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Boston Medical and Surgical Journal
126 Massachusetts Ave., Cor. Boylston St., Boston 17, Massachusetts

INFANT MORTALITY IN THE UNITED STATES.

There has been compiled by the American Child Hygiene Association a valuable statistical report of the infant mortality in 269 cities of the United States. It will be for the interest of the 2,500,000 babies born in the United States each year if government and health officials and citizens, after giving thoughtful attention to a comparison of these statistics, consider the conditions in their own cities and discover the determining health factors in which they are deficient. In the following cities, where the mortality rate is under 50, babies apparently have the best chance of surviving: Brookline, Massachusetts, with a rate of 40; Berkeley, California, 44; Marinette, Wisconsin, 45; Aberdeen, Washington, 45; Everett, Massachusetts, 47; Madison, Wisconsin, 47; Piqua, Ohio, 48; Alameda, California, 49. The health authorities in these cities are to be congratulated and their methods emulated. The ten largest cities in the United States have the following rates: New York City, 82; Philadelphia, Pennsylvania, 90; Detroit, Michigan, 97; Cleveland, Ohio, 91; St. Louis, Missouri, 75; Boston, Massachusetts, 97; Baltimore, Maryland, 97; Pittsburg, Pennsylvania, 115; Los Angeles, California, 67; San Francisco, California, 65.

With the exception of Lackawanna, New York, where the mortality rate is 276, due to the fact that an institution receiving foundlings and dependent infants from one-half of the state is located there, the city having the poorest record is El Paso, Texas, with 245. Other cities where the particularly high mortality rates indicate a need for increased infant welfare supervision are Burlington, Vermont, where the rate is 150; Paducah, Kentucky, 146; Hannibal, Missouri, 145; Ironton, Ohio, 139; Fond du Lac, Wisconsin, 135; Knoxville, Tennessee, 135; East Chicago, Indiana, 134; and Wilmington, North Carolina, 132. Seattle, Washington, Minneapolis, Minnesota, and San Francisco, California, with death rates respectively 54, 61, and 65, have the lowest rates among cities with a population of over 250,000; cities of this size having the highest rates are Pittsburgh, Pennsylvania, 115; Buffalo, New York, 107, and Kansis City, Missouri, 103. Of cities with a population of between 100,000 and 250,000, Houston, Texas, with 61, Oakland, California, with 62, and Cambridge, Massachusetts, with 64, have the lowest rates; and New Bedford, Massachusetts, with 124, Camden, New Jersey, 121, and Nashville, Tennessee, 116, the highest.

Upon the adequate protection of our babies depends the future of our race. If this is to be secured, every city in the country should see that all infant births are registered, that supervision and care are provided for pregnant women, that child health centers are established, that the milk supply is pure, that medical school inspection is instituted in the schools, and that school children are taught health habits. The records achieved by a few cities demonstrate what can be accomplished if proper health measures are demanded and enforced.

* * *

MEDICAL NOTES.

Institute of Psychiatric Research in Germany.—The following observations of a German professor in regard to insanity in Germany have been published in a recent issue of *The British Medical Journal:*

In Germany one person in five hundred requires asylum care; at least twice as many persons suffer from mental disorder in some form. In addition, there is an unknown and uncontrollable number of degenerates engaging the attentions of the police. Asylums are primarily for the care of the insane, and asylum workers are chiefly occupied in clinical and administrative duties and have no time for research. The proper conditions for research work can only be realized in specially equipped institutes adequately endowed. Such an institute is already in being at Munich, and it is expected that money will be forthcoming from private sources to provide a large new building on a site already given by the city authorities. Five departments exist—three for anatomical work and one each for serology and statistical research. Distinguished scientists control the departments and enjoy complete independence. Departments of psychology and biochemistry are projected together with a very complete library. As a result of considerable endowments it is hoped to engage suitable collaborators and to provide facilities for scientific journeys and investigations in foreign countries. Professor Kraepelin sketches a large field for research, including the influence of poisons such as syphilis and alcohol on the organism, and the nature and origin of dementia praecox, epilepsy, and the manic-depressive states. He anticipates that much progress will be made in these problems from researches in serology, biochemistry, and endocrinology. Degeneration presents another wide field in which aid will be sought from large collections of statistics concerning the prevalence of mental disease, epilepsy, deaf-mutism, vagrancy, prostitution, alcoholism, and syphilis. The work was begun in April, 1917, and means are being found to carry it on and extend it, and to link the institute with a new hospital for the insane which the city of Munich proposes to build.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending October 23, 1920, the number of deaths reported was 173 against 175 last year, with a rate of 12.06 against 11.46 last year. There were 27 deaths under one year of age against 30 last year.

The number of cases of principal reportable diseases were: Diphtheria, 49; scarlet fever, 25; measles, 6; whooping cough, 25; typhoid fever, 1; tuberculosis, 48.

Included in the above were the following cases of non-residents: Diphtheria, 15; scarlet fever, 5; typhoid fever, 1; tuberculosis, 9.

Total deaths from these diseases were: Diphtheria, 2; whooping cough, 1; tuberculosis, 9.

Included in the above were the following cases of non-residents: Tuberculosis, 2.

Infantile paralysis cases, 6; deaths, 2.

◆

The Massachusetts Medical Society.

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Obituary.

FRANK WESLEY NOLAN, M.D.

Dr. Frank W. Nolan, aged 52 years, a physician in Greenfield until seven years ago, died at his home in Springfield October 14, 1920. He was born in Springfield and attended the public schools there. Later he entered Yale Medical College and graduated in 1898. He took a postgraduate course in the Charity Hospital in New York.

He immediately began practice in Greenfield and was very successful. His health gave way under the strain and he was forced to travel. For the past seven years he has spent his time largely in an effort to regain his former strength.

He leaves his widow, Anna P. Nolan; his mother, Mrs. Catherine Nolan, of Springfield; a son, Thomas B. Nolan of New Haven, Ct.; a sister, Emma L. Nolan, and a brother, John W. Nolan.

He was not a member of the Massachusetts Medical Society.

Correspondence.

MATERNITY AID.

Fitchburg, Mass. Oct. 23, 1920.

Mr. Editor:—

The President of the Massachusetts Medical Society says, according to Dr. Bowers, that physicians have shown a "lack of interest in the subject (maternity aid) and of coöperation with the commission, which is a reflection on the loyalty or intelligence of the profession, or both." Which one of the two gentlemen makes the remark about the "loyalty and intelligence of the profession" is not quite clear, however.

Last spring a local medical society held a special and largely attended meeting for the purpose of discussing the so-called Spencer bill. The vote in disapproval of the bill was unanimous, and a committee was appointed to attend the hearing at the State House and speak against it. Two of the committee attended, giving up all of one day for the purpose. The entire time of the hearing was taken up by Miss Spencer and her satellites and the committee had no opportunity whatever. The third member of the Committee attended the second hearing at the State House and, after a long wait, was heard only by making a special request and practically insisting. After this experience do you think that, if we have not shown more "interest and coöperation," it should be attributed to want of "loyalty and intelligence"?

Various statements that have appeared in the Journal, and its general attitude and that of the officers of the State Society regarding maternity aid, constitute a very serious charge against the medical profession and one, as I believe, wholly unwarranted and uncalled for. It has seemed that you were more interested in promoting the schemes of a restless woman than in the welfare of the medical profession.

If any legislation is enacted such as was threatened by the Young bill and the Spencer bill, I believe that it should and will meet with such organized and united resistance from the profession that it cannot be carried out. Even if the condition of obstetrical practice in this state is intolerable, as you say it is, surely the control of the entire medical profession by the State Board of Health will be intolerable.

E. P. Miller, M.D.

Miscellany.

UNITED STATES CIVIL SERVICE EXAMINATIONS.

Assistant Field Agent, Protective Social Measures. November 17, 1920.

The United States Civil Service Commission announces an open competitive examiation for assistant field agent, protective social measures, on Nov. 17, 1920, at the usual places of examination Vacancies in the United States Interdepartmental Social Hygiene Board, in duty in Washington, D. C., and in the field, and in positions requiring similar qualifications, at salaries ranging from $1,200 to $2,000 a year, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

Applications. Applicants should at once apply for

Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Applications should be properly executed, excluding the medical certificate, and filed wth the Commission at Washington in time to arrange for the examination at the place selected by the applicant.

The exact title of the examination, as given at the head of this announcement, should be stated in the application form.

Applicants entitled to preference should attach to their applications their original discharge, or a photostat or certified copy thereof, or their official record of service, which will be returned after inspection by the Commission.

DIRECTOR OF BUREAU, DIVISION, OR SECTION OF PROTECTIVE SOCIAL MEASURES, $3,500 TO $4,500 A YEAR.

SUPERVISOR OF PROTECTIVE SOCIAL MEASURES, $2,800 TO $3,600 A YEAR.

FIELD AGENT, PROTECTIVE SOCIAL MEASURES, $1,800 TO $2,000 A YEAR.

SPECIAL ASSISTANT AGENT, PROTECTIVE SOCIAL MEASURES, $900 TO $1,500 A YEAR.

Receipt of Applications to Close Nov. 28, 1920.

The United States Civil Service Commission announces open competitive examinations for the positions listed above. Vacancies in the United States Interdepartmental Social Hygiene Board, for duty in Washington, D. C., and in the field, at the salaries indicated, and in positions requiring similar qualifications will be filled from these examinations, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion.

Applications.—Applicants should at once apply for application form stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Calif.; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone, or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Applications should be properly executed, excluding the medical certificate, and must be filed with the Civil Service Commission, Washington, D. C., together with thesis or publications, if required, prior to the hour of closing business on November 23, 1920.

The exact title of the examination, as given at the head of this announcement, should be stated in the application form.

Applicants entitled to preference should attach to their applications their original discharge, or a photostat or certified copy thereof, or their official record of service, which will be returned after inspection by the Commission.

PHARMACOLOGIST, $2,500–$3,000.

Receipt of Applications to Close Nov. 30, 1920.

The United States Civil Service Commission announces an open competitive examination for pharmacologist. A vacancy in the Bureau of Internal Revenue, Treasury Department, Washington, D. C., at $2,500 to $3,000 a year, and vacancies in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Applications.—Applicants should at once apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii; Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Calif.; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone, or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Applications should be properly executed, excluding the medical certificate, and must be filed with the Civil Service Commission, Washington, D. C., with the material required, prior to the hour of closing business on November 30, 1920.

Applicants entitled to preference should attach to their applications their original discharge, or a photostat or certified copy thereof, or their official record of service, which will be returned after inspection by the Commission.

RECENT DEATHS.

DR. BENJAMIN HERBERT YOUNG died at his home in Amesbury, October 22, 1920, aged 66 years. He was born in Rochester, N. H., attended Bates College and was graduated from the Medical School of Boston University in 1880. He had practised his profession in Amesbury since graduation.

DR. EDWIN LOUIS DROWNE died at the New England Baptist Hospital, from cardiac insufficiency, on Oct. 24, 1920, aged 43 years. He was a graduate of the Harvard Medical School, class of 1904, and a house-officer at the Boston City Hospital, following which he was for some time a resident surgeon at the Haymarket Relief Station. After that he was in general practice in Concord, but for some years had been treating cases of intestinal stasis and had his office in Boston.

He is survived by his mother, Mrs. Abbie S. Drowne of Mt. Vernon, N. Y., and by his widow who was formerly Miss Agnes Marks.

SOCIETY NOTICES.

HARVARD MEDICAL SOCIETY.—Next meeting in the Peter Bent Brigham Hospital amphitheatre (Van Dyke Street entrance), Tuesday evening, Nov. 16, 1920, at 8.15 o'clock.

PROGRAM.

Dr. Oliver Wendell Holmes and Harvard University.
Pres. Charles W. Eliot.

Recollections of Dr. Oliver Wendell Holmes.
Dr. F. C. Shattuck,
Dr. W. F. Whitney.

Drs. Whitney and S. W. Streeter will exhibit Holmesiana of interest to the medical profession.

Medical students and physicians are cordially invited to attend.

BOSTON TUBERCULOSIS ASSOCIATION. — The seventeenth annual meeting of the Boston Tuberculosis Association will be held at 3 Joy Street, Boston. Thursday, Nov. 18, 1920, at 3.30 o'clock. Addresses by Col. George E. Bushnell, who had charge of all the tuberculosis work in the army during the great war, and George S. C. Badger, M.D., President of the Boston Tuberculosis Association.

The public is invited.

There will be a short meeting of the members of the council immediately after the annual meeting.

ISABEL F. HYAMS, *Clerk*.

The Boston Medical and Surgical Journal

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Address.

LESSONS FROM THE SELECTIVE MILITARY DRAFT.*

By Oliver H. Howe, M.D., Cohasset, Mass.

The selective military draft was in many ways a wonderful revelation. It showed, throughout our nation, a respect for authority, a submission to law and a patriotism far greater than we had reason to expect. This is all the more wonderful because of the impression that many of our young men are growing up without sufficient restraint, with too marked individualism and too little respect for authority. Dread of the consequences of war was present, but flagrant cases of evasion were not frequent; while on the other hand, we found a quiet courage, a willingness to serve and often an enthusiasm and passionate patriotism in instances where we did not expect it. To these must be added the fact that a fair proportion of the aliens did not claim exemption on that account, but were willing to fight for their adopted country.

Compared with conditions during the Civil War, when frantic search was made to secure substitutes, we may well be proud of the type of public sentiment revealed during the draft. Probably every draft officer had a lingering fear that some friend or acquaintance would try to draw on his sympathies or attempt to use improper influence upon him. Such was not the case in my experience. Numbers of persons made inquiries of me in order to ascertain the proper procedure to comply with the law, but not one suggested any evasion or attempted to influence my decision.

The absolute democracy of the draft examination was remarkable. The bank cashier, the millionaire's son, the mechanic and the laborer undressed side by side and were upon the same footing. Each had to appear on the day appointed, wearily await his turn and abide by the decision made. In view of the facts that the accommodations of draft headquarters were of an improvised nature and that the work was usually done under pressure and with scant time for courtesy, the infrequency of complaints was noteworthy. The Government did not choose army officers or officials for this draft work, but appointed civilians, many of whom had never before served in any official capacity. Perhaps the draft measures were more readily accepted by the public because local men were everywhere in charge of it. The patriotic service and fine type of integrity manifested by members of local, district, and medical advisory boards, is a matter of satisfaction.

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* Read before the Norfolk South District Medical Society, April 1, 1920.

To lawyers, business men and doctors alike, this is creditable. The work always involved inconvenience and sacrifice, but was cheerfully performed by all and in so impartial a manner that charges of collusion or corruption are practically unknown.

To the physicians it was a valuable experience in systematic physical examination. It developed expeditious methods and furnished training in prompt diagnosis and conclusions. The fact that several physicians worked together gave opportunity for consultation and comparison of views. The medical advisory boards added the judgment of specialists and decided many doubtful cases.

The draft officer was many times overwhelmed with puzzling detail, yet was led to see in the whole conception a wonderfully planned machine and was filled with admiration that it could have been conceived and put in operation so quickly. The Act of Congress was passed May 18, 1917, and on June 5, only 18 days later, the whole organization of registration, involving 125,000 members and assistants, was in operation and all men in the United States between the ages of 21 and 30, about 10,000,000 in number, were registered in one day. The appointment of local and district boards was completed by June 18, only one month after the Act was passed by Congress! The order of draft numbers was evolved by lottery on July 20, and on August 6 physical examinations were begun in the division in which I served. The first Massachusetts men were put into the Army through the draft on September 3, but the Provost Marshal states in his report that some were inducted elsewhere as early as July 30.

Changes in the regulations and in the standards of physical examination were made from time to time, but all with military needs in view and to the end of perfecting the scheme. One year from the first registration, another was held, to include those who had recently attained the age of 21. A supplementary registration of the same kind was held on August 24, 1918, and on September 12, 1918, a third registration included all unregistered men between the ages of 18 and 45, both inclusive. In all 24,234,021 men were registered.

Meantime a simplification of printed forms had been made and about December 15, 1917, registrants were required to file questionnaires giving full information about their social and occupational status. These were examined and classified by the local boards. This method thenceforward limited the physical examinations to Class A, comprising single men, without encumbrances or exempting occupations; and saved much valuable time. It moreover considered the individual in all his relations to the community and served to place him in the most useful relation to the Government, whether that might be to make a soldier of him or retain him as a munition worker, food producer, or skilled artisan of one kind or another, or to allow him to support and educate his family for the good of the nation. The underlying idea of the whole draft system was to yield the greatest military return with the least disturbance of civil activity. Occupations were further classified into essential and non-essential as related to war. Of particular interest is the famous "work or fight" order, which would have had marked results if the war had lasted longer. The questionnaire furnished the ideal method and might well have been adopted from the start. The original draft plan included only the Army, but was later enlarged, so as to furnish recruits for the Navy also. Many men had anticipated the draft and had voluntarily enlisted in the Army or Navy. These men enlisted from commendable and patriotic motives, but because of their enlistment the draft plan was never all inclusive. Doubtless many of these volunteers would have been of greater service to the Government had they remained as expert chemists or machinists, or wherever placed after a careful consideration of their aptitudes and abilities. In Massachusetts 52% of the quota called for by the draft had been already filled by voluntary enlistments. Portland, Maine, and Portland, Oregon, had each sent so many men to the war that their quotas were already filled and these cities required no draft.

The addition of a classification for "special and limited service" allowed many men with defects to be assigned to serve the Government in clerical or occupational capacities and the classification of "remediable defects" enabled many men to enter the fighting service after the Government had provided for them curative surgical operations or the requisite dental work.

As to real malingering, I saw very little of it. Some men tried to exaggerate dyspeptic, rheumatic, or nervous symptoms. Asthma was never proven without a physician's affidavit, and some shallow claims were made for it by the registrants. Pretense of deafness was readily detected by the examiner, but defective vision was more easily simulated. All doubtful cases of the latter were referred to an oculist. In the latter part of the work we had the assistance of the medical advisory boards, composed of the various specialists and therefore did not have to reject so many men, but could more fully give the Government the benefit of the doubt. One man of robust physique so managed his breathing as to fail in the required chest expansion. After repeated trials in the presence of the whole board, we promptly certified him as qualified for military duty.

Most of the attempts of evasion in our experience came through alleged dependency or occupation. Husbands giving only slender support to wives and families, sons really supported by their "aged and infirm parents," or claiming fully to support them when there were other brothers equally able to maintain them, were common and obliged us constantly to be on our guard. To these were added men who married to escape the draft. Agricultural and industrial claims required close scrutiny and often a visit to the farm or factory by the Government claim agent. Incomplete, unsatisfactory and misleading answers were often given in the questionnaires, but even in these it was rare that downright perjury could be proved.

Having briefly outlined the main features of the draft plan, it is of particular value to us as physicians to consider it in its health relations and to draw from it various lessons.

There were examined physically at local boards about 2,510,000 men between the ages of 21 and 30 years. Of these 46.8% were found to have defects and 730,000, or 29.1%, were rejected on physical grounds. Additional physical defects discovered or emphasized in mobilization camps, resulting in the discharge of the men, would perhaps increase this to nearly 35%—a rejection of more than one man out of every three. It is a reproach to a nation to have such a record of its men during the period of their greatest vigor, especially when most of these defects could have been prevented or cured if they had received early treatment.

There are, however, several circumstances which serve to modify these percentages, so that the real condition is not quite so bad as it seems. The first of these relates to the large number of voluntary enlistments—a number amounting in Massachusetts to 52% of the quota of the first draft. These men were healthy and without marked defects or they could not have been retained in the Army or Navy. The body of men remaining and subject to the draft did not, therefore, represent the normal man-power of those ages, for the reason that a considerable number of its sound and most enterprising men had been combed out in advance by voluntary enlistment. Again, the rigorous standards required for war efficiency would lead to rejection of a few defects that would not materially interfere with civil pursuits. Stature less than 60 inches, loss of sight in one eye, dependence upon eye glasses or upon artificial teeth, would not incapacitate the individual for civil occupations.

The number of defects was far greater than appears in any reports, for the reason that it was not uncommon for a man to have more than one serious defect, while rejections in these cases were often made naming one defect only. A man examined by me was deficient in height and weight, had defective vision and teeth, had heart disease and hernia. He also had deformity of one arm and was mentally deficient. We must also consider the numerous disabilities in men accepted for the Army, in whom the defects were not present in sufficient degree to cause rejection. Although Army surgeons estimate that 90% of these were not of such a nature as to interfere seriously with occupations in civil life, there would doubtless be some restriction or limitation in the occupation chosen, and nearly all were caused by some form of neglect. We should not be content with making the best of a bad thing, but should aim to have strong citizens, who can follow the occupation most suitable without physical handicap.

Personal observation during the draft and subsequent study of statistics impress me with the fact that the physical condition of American manhood is far below the standard it ought to represent. Statistics vary a great deal in different parts of the country, but for the sake of studying our local conditions, I will analyze the cases of 233 men rejected physically by me in the first draft. The causes of rejection were as follows:

Defective teeth	45
Defective vision	33
Hernia	29
Underweight	27
Flat-foot and other deformities of feet	22
Other deformities and losses	16
Organic heart disease	15
Otitis	6
Varicose veins	6
Deficient chest measurement	5 each
Overweight	
Deafness	
Loss of one eye	
Underheight	
Varicocele	
Epilepsy	2
Undescended testicle	2

Considering, first, defective teeth, which was the most prominent cause of these rejections and constituted 18.3% of the whole number, let us inquire as to the cause. For the first 15 years of my practice, there was no dentist in the town. The bulk of the population had not formed the habit of going to a dentist and many of them were averse to doing so. A common axiom with the parent when a child complained of toothache was: "Does it ache? Have it out." Physicians extracted many teeth, usually for the benefit of the patient, but when comparatively sound teeth were desired removed, the urgent advice to go to the dentist and have treatment to save the tooth in many cases met with a flat refusal. I have sometimes reluctantly and under protest, extracted teeth after ineffectually begging the parents to have them saved. Neglect is most disastrous in the case of the six-year molars, which come before the parents are aware and often decay beyond recovery before they are given any recognition. As nine of the ten towns included in my draft division are small, the lack of dentists, and lack of dental education of parents undoubtedly prevailed through all these towns and the fruit of this neglect was seen in the draft.

Aside from the pain and loss of time caused by toothache and jaw abscesses, decayed teeth lead to imperfect mastication of food, poor assimilation and nutrition and the ills of various dyspeptic affections. Moreover, abscess cavities connected with the roots of the teeth are common and serve as centers of focal infection, which may be the direct cause of various rheumatic and arthritic affections. They may also be the source of boils and carbuncles and any acute process like otitis or appendicitis will more likely become purulent because of focal infection.

The draft regulations regarding the teeth were later made less stringent and provision was made for dental repair by the Government in order to fit some of these men for service. A certain proportion of rejections for teeth were made on account of removable plates, which could not be replaced in war if broken or lost. These men, of course, were not unfitted for civil life, but still bear the stigma of probably having lost their natural teeth unnecessarily. New England, New York and New Jersey have a far greater proportion of defective teeth than any other part of the country. A comparative freedom from it is found in the prairie states and those to the southwest. It is more frequent in cities than in rural districts and it is not unlikely that the old English stock that settled New England and the French Canadians who have colonized within it both have a racial lack of resistance to dental caries.

Defective eyesight formed 13¾% of these rejections. A large proportion of these wore glasses and were not thereby badly off as civilians. The tests, however, had to be made with the unaided eyes, for a soldier dependent on glasses would become useless if they were broken or lost. Doubtless some of these may have suffered from neglect or misuse of the eyes in earlier life. Here again New England and some of the Middle States show an excess of defective vision, possibly due to close use of the eyes in the large cities and perhaps owing to a constitutional tendency to myopia.

Underweight constituting 11¼% represents a lack of nutrition and of physical power. Perhaps a few of them had recently recovered from illness, but the majority were no doubt associated with some special cause, in manner of life, occupation or habits, which might, on investigation, be remedied. This proportion of weaklings in this land of plenty is a reproach to our civilization. New England has a large excess of underweight, but the greatest areas of it are in Tennessee, Kentucky and adjoining states, ascribed to hookworm disease.

Hernia formed about 13% of our rejections. Our early regulations obliged us to reject them all, but later we were allowed to accept all small, easily reducible hernias and all others were referred to the medical advisory board. It was the intention of the Government to operate upon many of these and put the men into military service. In many cases the registrants did not know they had hernia and the draft was useful in discovering the disability.

Flat foot, with other deformities of the foot, was the cause of 9% of our rejections. This is larger than was obtained in our Board in the later drafts, when rejection was limited to cases of functional impairment of the feet. Flat foot in its various degrees is extremely common and in all the mobilization camps was found to exist eight times as frequently as any other defect. The slighter degrees cause no inconvenience and curiously this is true of a few of the more pronounced cases. Flat foot, however, is a very important cause of disability and impairs the freedom, efficiency and health of many people in civil life. Its causes are faulty habits of standing and walking and the wearing of improper shoes. When the knee-joint stands vertically over the center of the ankle, the weight rests upon the ball, heel and the strong outer border of the foot. If the knee stands a little outside the vertical, it accentuates and confirms this correct position. If, however, the knee stands inside the line of the ankle, the inner part of the sole comes nearer the ground, resulting in time in a rolling inwards of the astragalus and a lowering of the internal malleolus. The exact condition of one's weight-bearing surfaces is graphically shown by stepping on a floor with the wet foot.

Unfortunately shoe lasts give the same height across the metatarsals with scant room for the large first metatarsal. To ease this condition, the wearer of the boot turns the toe outward, bringing the foot into the position of eversion and predisposing to flat foot. The remedy consists in ample width and fulness below the instep or in a shoe that laces far down toward the toe.

Most of us were taught in childhood to "toe out." The Indians, however, always walked toeing straight ahead and their instinctive gait proves to be the correct one. It is a curious fact that soldiers are still required to stand with toes widely divergent during their drills, thus perpetuating a position of the feet that conduces to flat foot.

The greater part of cases of flat foot show no bony structural alteration and can be cured by having the patient learn to stand and walk correctly and by proper shoes and a few simple exercises. Drs. Bradford and Cotton both consider plates useful in the early part of the treatment, but find they can be discontinued when proper shoes are worn and the muscles become properly trained. Raising the inner side of the sole and heel of the shoe is useful in the same way as plates.

Other deformities and losses constitute 6% of our rejections. These included stiff knee, ankle, wrist and elbow joints and loss of limbs or fingers. These were due mostly to accidents, infectious inflammation, to tuberculosis and to rheumatic affections, many of them, no doubt, preventable or the result of unskillful treatment.

About 6% of our rejections were due to so-called organic heart disease. These we identified by a systolic murmur, loudest at the apex and transmitted to the axilla and back. We had to reject all who showed these signs in the first draft, because the regulations then in force required us to do so. Later a change was made, embodying the following sentence: "Systolic murmurs unassociated with enlargement of the heart, alteration of the first sound, accentuation of the pulmonic second sound or abnormal response to exercise, may be considered without significance." Also, "All diastolic murmurs at apex or base, including presystolic murmurs, shall be considered evidence of valvular disease." Rheumatic history was also given weight.

Our original regulations coincided with the views we all held for many years, while the revised regulations represent the modern view as set forth in an article by Dr. Henry A. Christian (Boston Medical and Surgical Journal, Nov. 29, 1917, pp. 750-753).

Following this change, we reëxamined our heart cases and qualified almost all of them for military service. It was rare to find disabling heart disease in men under thirty and even if an occasional systolic murmur should prove to be associated with valvular trouble in a heart of normal size and action, the individual would readily serve through a war and would not reach his day of reckoning for some years in the future.

Valvular disease in early life should be preventable by protecting the individual from the exanthemata and from focal infection arising from diseased teeth and tonsils. In the whole country and throughout the draft 5½% of the men examined were found to have defects of the valves or blood vessels.

Otitis and varicose veins each made 2½% of our causes of rejection. Otitis can be minimized by early removal of adenoids and by prompt and skillful treatment of ear troubles. Varicose veins are not so easily preventable, although early recognition and treatment will serve to limit their extent.

Deficient chest expansion, overweight, deafness, loss of one eye, underheight, and varicocele each caused rejection of 2½%. Deficient chest expansion must be classed with underweight, as each shows faulty development or lack of nutrition. Overweight might have been prevented by proper diet and treatment, and deafness due to acute ear trouble may have been preventable.

Two per cent. were feeble-minded; 1½% had hemorrhoids; less than 1% had epilepsy, and the same number undescended testicle.

The regional distribution of defects is well stated in an article by Davenport and Love (*Scientific Monthly*, Feb. 1920, p. 141) as follows: "The northeastern part of the country appears to be characterized by congenital defects and those of city life. The Northwest is characterized by deformities due to accidents, by goiter and by flat foot. The Southeast is characterized by venereal diseases, hookworm and similar complications, including blindness of one eye, arthritis, and ankylosis, underweight, mental defect, emotional disturbances; by pellagra, hernia, loss of upper extremity and bullet and other wounds. The Southwest is characterized by tuberculosis, drug addiction, hypertrophied tonsils and hernia. . . . . From a military standpoint, the Northwest contains the best men of the country." The cities show about 15% more defects than the rural districts.

Kansas leads the country with the fewest defects—only 42%—with only 14% of rejections. Nebraska and South Dakota come very near to the record of Kansas. These states were settled by a young, active and enterprising population, reinforced by wholesome immigration from Southeastern Europe.

Rhode Island, with 80% of defects, has the poorest record of any state. It contains a larger proportion of city population than any other. Massachusetts makes a very poor showing as regards health of its man-power, ranking forty-seventh among all the states and territories of the Union. Only Rhode Island and Vermont have worse records. Forty-seven per cent. of all Massachusetts men examined were rejected because of physical defects. Why should our state have such a bad record? Being one of the oldest and most conservative parts of the country, it perhaps has had more intermarriage of relatives, thus causing deterioration of the race. It has also suffered from emigration to states and territories farther west. In these cases the most vigorous and enterprising have gone, leaving at home those of less marked ability. Thus there has gone on in many parts of New England a gradual selection, which has amounted to a survival of the unfit. We claim to be the most enlightened part of the world and yet one does not have to travel far to find conservatism born of dense ignorance. Western states, although called by us "wild and woolly," are very quick to seize upon new ideas and do so all the more readily because they are not steeped in tradition.

Dense ignorance has allowed a generation to grow up showing numerous individuals with defective teeth, with all digestive troubles and focal infections inherent in the condition. It has marred the race by round-shouldered, narrow-chested, flat-footed individuals with the "hatchet faces" produced by adenoids. These facts, revealed by the draft appraisal, may well cause alarm and lead us to inquire how to escape from a continuance of these conditions.

Some of these registrants were the unwilling victims of heredity, and improvement should have been begun, as Dr. Holmes long ago suggested by more carefully selecting their grandparents. No one doubts the wisdom of careful breeding of live-stock, but the human race, vastly more important, is allowed to propagate itself without guidance. Let us hope that in the requirements of the future, eugenics will have a place. Mankind no longer consists of detached units and we are constantly learning that the welfare of the whole community is of the highest importance and that it can be obtained only by forethought and by the development of the community spirit.

Our next best recource is to begin with the very young in the public schools, preferably in the kindergarten. Medical inspection should here make its first survey, providing hygienic conditions in the school and securing the early elimination of adenoids and diseased tonsils. A little later the six-year molars should be sought out and saved, either with the coöperation of the parents or by a dental clinic under the direction of the school. Meantime close watch must be kept upon the weight and nutrition of the pupils, for full vigor must be maintained during the period of rapid growth. Talks on hygiene should be given at intervals during the course, with particular instruction in proper methods of standing and maintaining erect carriage. If this plan is followed underweights and defective chest expansions will be discovered and remedied long before the individual reaches adult life.

Many times faulty conditions exist in the home which will balk all measures for the improvement of the child. These must be discovered by the school nurse, who should visit the home, observe the conditions there and tactfully educate the parent as needed.

Backward pupils are a problem in every school. They not only fail themselves, but they retard whole classes. Mental tests are now used, which readily show the mental power of a given pupil. In my work as school physician, I have seen the need of devoting particular attention to backward pupils, including those frequently out of school because of illness. I have, with the coöperation of the superintendent, begun to bear down on these cases in three ways: (1) Physical examination. (2) Mental tests. (3) Study of the home by the school nurse. Sometimes the mental dulness disappears when adenoids are removed or when deafness is relieved. In others, improvement of the home conditions removes the difficulty, while in still others the backwardness is entirely mental. It is a rare kind of backward pupil, in which the nature of the difficulty cannot be revealed by this method, although unfortunately some of these cases can be remedied only in part.

All these measures will fail in their best results unless there is in every town a department of physical education with some gymnasium facilities and supervision of the outdoor sports.

Annual physical examinations of pupils, properly recorded, will show the need of individual attention and also improvement accomplished from year to year. Medical supervision of schools in Massachusetts was introduced largely to limit the spread of contagious diseases, but it has come to mean much more than that. It should guard the well-being and physical perfection of the pupil throughout his school course. If obstacles to his success exist, they should, if possible, be removed. His physique should be strengthened and well maintained. He should receive such instruction that, on leaving school, he will be able to care for his health and to insist on a high grade of living.

I believe that no field of human effort can be more productive in these days than the care of the well-being of our young people. By these means we can hope to produce a race that will be erect, vigorous, alert and successful. These are the days of preventive medicine and it is not unlikely that many of these pupils brought up in the atmosphere of regular inspection will desire to continue such inspection at intervals through life, forestalling many a preventable complaint, maintaining a high degree of efficiency and fortifying the system against the advance of age.

I already find a few individuals who desire to have a physical examination made once a year. It is in line with other practical methods of efficiency. The prudent manufacturer has his production department, his cost and sales systems examined by experts. The automobile will give its best service if it is critically examined at regular intervals. Why not the human machine also? Deviations from health can be discovered and dealt with in the incipient stage. The individual with a tendency to high blood pressure can be advised so to regulate his life as to restore the balance of his circulation. The first indications of pendulous abdomen or obesity can be observed and dealt with. These and a host of other conditions can be noted by the physician before the patient is aware of them and such advice given as will not only serve to prolong life, but to give it greater facility and satisfaction. This method is far more advantageous than waiting till the man is sick and the disease may have done irreparable injury to his system. Moreover, we all know of men supposedly well, who have dropped dead upon the street. By keeping a careful record of successive examinations in a card system, variations can be readily noted and if the man falls ill at any time the record and history of his normal state will be of great value in the conduct of his treatment. General examinations of the eye, ear, nose, throat, and teeth should be included for completeness, serving, if for nothing else, to remind the patient to go to his oculist, dentist or other specialist as needed.

Someone may object that examinations of well people may direct their minds abnormally to symptoms and diseases. This, in my experience, does not occur. Assurance of health always has a tonic effect and coöperation is readily secured. Talk with the man who has just been accepted for life insurance and see what he says.

Such examinations should not be made in dull routine, but with the sympathetic interest of the physician, visualizing the life and regime of the individual, lightening the load here, bestowing precaution there, and injecting common sense and optimism where necessary.

The busy practitioner in his daily round should not be content with simply getting the patient through his attack of tonsillitis or influenza, so that he can resume his occupation, but should review his physical condition and consider whether he is getting the best out of life. If not, he should study his case and advise him accordingly. The general practitioner holds a rare position as confidential friend and adviser and should manifest a vital interest in his families from generation to generation. If specialists are needed, he should wisely select them and see that their work produces the required results. He should be the strong coordinating influence, directing and enforcing all good measures for the welfare of the patient. He should not lightly hold the responsibilities of this relation, but should remember that for the time being the family look up to him as to no one else. He should therefore not necessarily confine himself to the particular patient he is called to attend, but should show a friendly interest in the family welfare, tactfully advising them of any errors in their method of life. He should, by no means, allow a defective or sickly child to grow up unnoticed or lightly pass by any source of focal infection. Such matters as these can be dealt with in a friendly spirit, without officiousness. A little interest here and there will contribute to that perfection of the race for which we all should strive.

Universal military training is now under discussion. Should it be adopted, the benefit of examinations like those of the draft, would be further extended. In fact, a physical survey of the youth of the land would be made every year. This would undoubtedly stimulate the race to greater physical stability. The military training would eliminate the last tendency to round shoulders and would improve the physique as it uniformly did during the late war.

Should the measures I have suggested be carried out in the schools and in the home and by the general acceptance of the means of preventive medicine, I feel sure that another generation will show a man-power that we can regard without reproach—a physical perfection of which we can be proud.

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Original Article.

TUBERCULOSIS AND INFLUENZA.

By John B. Hawes, 2nd, M.D., Boston.

What is the effect of an attack of influenza on previously existing pulmonary tuberculosis? This question has been asked countless times during the past two years. Physicians all over the country and especially those who deal extensively in pulmonary diseases have again and again met this problem and worried over its solution. There is an amazing difference of opinion in regard to it. Some, notably Fishberg, have held that consumptives possess a high degree of immunity against influenza and that an attack of this disease does little or no harm to the previously existing tuberculous process; others look upon it as a very grave and serious complication.

Raymond Pearl, of the Department of Vital Statistics of Johns Hopkins University, in a preliminary report has furnished the most valuable information on this subject that I have seen. Of over 2,000 tuberculous persons that he investigated, 25% had influenza; of 8,000 non-tuberculous persons 22.3% had influenza. This difference is small and not significant one way or the other.

The question of immunity is an interesting one. Does a consumptive really possess any such immunity or is the decreased incidence of influenza among consumptives which apparently does exist as compared with that incidence among the population at large due to the careful hygienic and better living conditions under which the consumptive lives? This is not an easy question to answer. In order to get further light on it from the experience of others, I wrote personal letters to a representative group of physicians whose practice deals largely with cases of pulmonary tuberculosis and asked their opinion as to the relation of influenza and tuberculosis and the effect of one on the other. The replies that I received, which I summarize here, are of interest.

Two out of the fifteen replies stated that they had no cases of influenza at their respective institutions. I feel that they are to be congratulated for this remarkable record.

Dr. E. R. Baldwin of Saranac Lake states that his experience at Saranac Lake leads him to believe that influenza did not do as much harm as was expected, especially in the way of aggravating existing tuberculous disease; undoubtedly it led to the discovery of many hitherto latent cases. Approximately 25% of the patients arriving at Saranac since September, '18, gave a history of influenza and attributed in their own minds at least, the outbreak of their tuberculosis to this disease.

Dr. C. H. Cocke of Ashville, N. C., was likewise pleasantly surprised by the way advanced cases of tuberculosis stood influenza. As a rule, he feels that such patients withstood this disease remarkably well.

Dr. Bayard Crane of Rutland, Mass., is of the opinion that a severe attack of influenza excites the tuberculous process seriously, although none of his cases died directly as a result of this disease.

Dr. Cleaveland Floyd of Boston does not feel that the tuberculous process was made any worse by influenza unless the patient had pneumonia as well. His impressions, however, in regard to this are still unsettled.

Dr. H. F. Gammons of Dallas, Texas, holds an opposite opinion and states that at least 75% of tuberculous patients suffered an increase in their trouble as a result of influenza. Of the patients entering his sanatorium, 90% did not have any sign of tuberculosis until they had influenza. The follow-up work in Texas shows that 75% of former patients who had influenza have died; whether or not death was due to influenza or tuberculosis, however, is not known.

Dr. Hugh M. Kinghorn of Saranac Lake, N. Y., had a very small proportion of influenza among his patients,—less than 10%. Out of ten cases, two died and eight recovered, of whom only one was made worse by influenza.

Dr. George N. Lapham of Rutland was one of those fortunate ones who had no case of influenza among his patients. Among his discharged patients there were a few who had relapses that they attributed to influenza. He was struck by the comparatively few cases of this disease among his tuberculous patients and believes that tuberculosis must furnish at least partial immunity against influenza.

Dr. David Lyman of Wallingford, Conn., likewise had only a few cases. Out of six patients with influenza only one was apparently any the worse for this experience.

Dr. C. L. Minor of Ashville, N. C., feels that a large number of our present cases of tuberculosis are the direct result of the influenza of 1918-19. Its effect on previously existing tuberculosis is to make it much worse. As a routine measure, he believes that every patient with influenza should be under careful observation for at least six months lest tuberculosis develop.

Dr. R. C. Paterson of Saranac Lake, N. Y., considers influenza a serious complication for anyone who has or has had tuberculosis. There was no influx of tuberculosis cases *immediately* after the epidemic, but since the spring of 1919 many patients have come to Saranac for the first time or for a relapse who definitely dated their trouble from their influenza.

Dr. Andrew Peters of Liberty, N. Y., writes for Dr. B. H. Waters of the Loomis Sanatorium that only ten patients contracted influenza. Of these, nine are living five of whom are in satisfactory condition. Out of 1,227 ex-patients, from whom inquiry was made as to influenza, only 70, or 5½%, reported that they had had this disease. Of these, 16, or 22%, died of influenza, eight had relapses apparently due to this, and 35 or 50%, are now in good condition, having apparently suffered no ill effects.

Dr. O. S. Pettingill of the Western Maine Sanatorium reports that out of 33 influenza cases at his sanatorium only one died and in only three did the influenza do any apparent harm. The rest are all alive and well.

Dr. F. M. Pottenger of Monrovia, Cal., has observed a number of patients who had tuberculosis without knowing it, whose infection was lighted up by influenza; where the influenza was at all severe it has made the tuberculous process worse and has reduced the patient's chances of getting well. On the other hand, he believes that not only are tuberculous patients certainly not any more susceptible to influenza but probably less so.

Dr. J. M. Wise of the New Hampshire State Sanatorium writes that out of 49 of his patients who had influenza there were 22, or 45%, in whom the influenza did no harm; six died as the immediate result of influenza, of whom five were already unfavorable cases, and five died later of tuberculosis which was made worse by influenza. He is of the opinion that influenza does distinct harm to the tuberculous patient.

Here then are expressions of opinion from men of wide experience coming from every part of the country. These opinions vary widely from those who believe influenza to be a most dangerous and fatal complication, almost invariably doing harm, as shown by Dr. Gammons' figures among ex-patients in Texas, to those who consider influenza always a serious but not always a dangerous complication and whose faith that the tuberculous patient does possess a certain degree of immunity against influenza seems to be borne out by their figures. The experience of Dr. Waters and Dr. Peters at Loomis, based on their discharged patients, seems to bear this out and is at distinct variance to that of Dr. Gammons of Texas.

In order to get further light on this subject I have studied the history of the epidemic as it affected the patients in Massachusetts sanatoria for consumptives and I have looked up the present condition of those patients who came down with influenza while in our state sanatoria.

The incidence of influenza among the population at large in Massachusetts was 3.5% in the year 1918, considerably less in 1919. The incidence of influenza in our state sanatoria during the entire years 1918 and 1919 was 4.4%. Its fatality in the State at large was 9.5% in 1918, 7.6% in 1919; its immediate fatality at our state sanatoria was 16.5%, and its ultimate fatality as far as I have been able to ascertain, including in this deaths of patients whose tuberculous process was apparently made worse by influenza so that the latter was the indirect cause of death, was 22%.

These figures certainly do not show any particular immunity to influenza among tuberculous patients nor anything to indicate, judging from the mortality figures, that influenza is not a serious complication. On the other hand it is well to remember that of the 2,000 patients on whom this study is based 44% were in the advanced stages of consumption and that of the 213 who contracted influenza 71, or 33%, went through a typical attack and recovered without apparently any serious after effects. Of these 213 patients who had influenza, 33% recovered without any ill effects; 20% were apparently made worse, though living at present; and 22% died either directly of influenza or indirectly, later on, of tuberculosis made worse by influenza.

Can one deduce anything from these figures? I think not. Although the incidence of influenza among patients at our state sanatoria was greater than that among the people of Massachusetts as a whole, it was vastly less than its incidence at other state institutions, such as at our insane asylums, etc., and among nurses at our large general hospitals and indeed among the public at large in the crowded quarters of our large cities. The mortality, 22%, at first seems distressingly large, but as I explained above, considering the fact that of those who died the greater number were already advanced consumptives for whom in most instances the prognosis was necessarily bad even without influenza, this high death rate is not so appalling. To me it is rather encouraging that the influenza did no more harm.

What can we learn from our experience with such an epidemic as this with especial regard to tuberculosis? I would answer this briefly as follows:

1. Eternal vigilance is the price of safety. We must regard any patient who comes down with a cold or other acute symptoms, whether or not he has tuberculosis, or dwells inside or outside a sanatorium, as a possible case of influenza and at all events a source of contagion.

2. Although it is quite possible and I personally believe probable that the tuberculous patient does possess a certain degree of immunity against influenza, this must not be taken for granted and every effort must be made to prevent his getting it.

3. The treatment of the tuberculous patient with influenza is the same as that of the person without tuberculosis and should be based on rational lines of rest, elimination and stimulation when necessary. It should be regarded at all times as a serious but by no means a hopeless or fatal complication.

4. Post-influenzal bronchitis and debility are real and definite clinical entities but in many cases, however, they serve merely to disguise a newly awakened pulmonary tuberculosis. In every case of influenza when there is either a cough or prolonged physical depression follow-

ing the disease, the patient should be kept under careful and constant supervision.

5. The early diagnosis of pulmonary tuberculosis, always a difficult task, has been made increasingly so on account of influenza and its effects. While undoubtedly many cases of tuberculosis have been discovered or made active on account of influenza, there are numerous patients who have been wrongly classified as consumptives owing to signs and symptoms, constitutional and referred to the lungs that were really due to influenza and not to tuberculosis. Care, conservatism and common sense are needed now more than ever in handling this difficult problem.

Clinical Department.

TRAUMATIC SPLEENS. REPORT OF CASE HISTORIES WITH DISCUSSION AND SUMMARY.

By Francis Freeman Henderson, M.D., Boston,
Boston City Hospital.

A survey of medical literature of recent years reveals very little about the surgery of traumatic rupture of the spleen. However, from 1909 to 1914 there are reported thirty-one cases of ruptured spleens,[1] from which one gets an idea of the rarity of such cases in general surgery.

A review of operations at the Boston City Hospital since 1914 shows ten cases of ruptured spleens, eight of which were traumatic, and two spontaneous in typhoid fever. Of these ten cases four survived the operation of splenectomy, and of the ten, I operated upon five, three of which lived.

Case histories of these five follow:

Case 1. Harry A.; age, 34. Admitted to the Boston City Hospital August 31, 1918. Previous History—Unimportant. History of Present Injury—The police stated that the patient was struck by a locomotive, and that he was brought to the hospital at once. Physical Examination—A well developed and nourished man showing a contusion of the occiput and a severe abrasion of the right shoulder. He complained of tenderness over the lower left chest, but there were no fractured ribs. The abdomen was held slightly rigid. The examination was otherwise negative. Temperature, 95.8° F., and pulse 85.

The patient was sent to the ward for further observation. During the following nine days the temperature and pulse slowly rose to 103° F. and 140 respectively. The right arm at this time was severely septic and was under treatment. Because of the patient's weakening condition, tenderness persisting in the left flank, and the rising pulse, operation for exploration was considered advisable.

Operation: The abdomen was opened through a high left rectus incision. A large amount of old blood was found in the peritoneal cavity. Exploration of the liver, kidneys, stomach and intestines revealed nothing abnormal. The spleen was found to be nearly severed through the middle, with a large amount of old blood clot over it. Splenectomy. The patient had 1500 c.c. of salt solution intravenously on the table, and was returned to the ward in poor condition. He died thirty-six hours after operation. Just before death his temperature was 107° F. and the pulse 150.

Case 2. Bernard C.; age, 45. Admitted to the Boston City Hospital October 26, 1918. History of Injury—The police stated that the patient was struck and run over by an automobile and that he was brought immediately to the hospital. Physical Examination—A fairly well developed and nourished man under the influence of alcohol and in considerable shock. Temperature, 97.5° F.; pulse, 140; respiration, 15. He was excited and complained of pain in the left side of flank. Local Examination—The tenth and eleventh ribs on the left were fractured, with contusions of the skin. The abdomen was held rigid by voluntary spasm. After two hours there was shifting dullness; the vomitus had an alcoholic odor; there was fresh blood in the urine. Diagnosis—Ruptured left kidney. Operation advised.

Operation—The abdomen was opened through a high midline incision. Free blood in large amount appeared on opening the peritoneum. The liver was normal in size and was evidently not ruptured. The spleen was torn about two inches into the hylus. Splenectomy. Retroperitoneal blood was found on the left and examination of that kidney revealed a torn vein near the hylus. Nephrectomy. The abdominal cavity was then sponged as dry as possible, but bleeding still persisted now from the region of the right kidney. It was examined and found to be lacerated in two directions through the cortex into the hylus. The kidney was brought forward and the capsule sutured. Abdomen closed without drainage; 1500 c.c. of salt solution given intravenously on the table. Returned to the ward in very poor condition. Death in two hours.

Case 3. Maude P.; age, 25. Admitted to the Boston City Hospital October 2, 1919. Past History—Patient has been married seven years with no children. Miscarriage six years ago. Had measles, pertussis and diphtheria as a child. She stated that since an appendectomy in 1916 she has not been well. Bowels always constipated without cathartics. A frontal sinus was drained, and tonsils and adenoids removed in 1917. Catamenia painful. Menstrual flow last month was much less than normal. On the date of entrance to the hospital she was menstruating and had dysuria. No pain on micturition; no nocturia. Present Illness—On September 30, 1919, the patient had a sharp pain in the lower abdomen and rectum; the onset was not sudden or very severe. Sitting at that time was painful. She did not collapse or take to her bed. That night she could not sleep, and she felt much worse the next day. On day of admission her husband became alarmed at her paleness and weak condition and decided to bring her to Boston by train. At the station, on arrival in Boston, she fainted and fell to the floor unconscious, remaining so until shortly before operation. On very close questioning, no history of trauma could be obtained. Physical Examination—A rather poorly nourished and developed woman lying on the examining table in a semi-conscious condition; a rapid pulse and shallow respiration; seems in considerable shock. Local Examination—The abdomen was markedly distended; there was extreme tenderness in the lower quadrants, and dullness in the flanks. Examination was difficult because of pain. Vaginal examination showed a soft cervix; uterus normal in size; vaults tender, particularly the left, and blood appeared on the gloved finger. Diagnosis—Ruptured viscus.

Operation—Abdomen opened through a low midline incision. On opening the peritoneum, there flowed out a large quantity of fresh blood with clots. The left tube appeared pregnant and was clamped; the right tube was normal. Bleeding still persisted, apparently coming from higher up. The incision was prolonged upward. Both kidneys were normal by palpation. The spleen, normal in size, was covered with blood clot and torn from cortex to hylus. Splenectomy done. The bleeding stopped, and the abdomen was closed in layers without drainage; 1000 c.c. salt solution were given intravenously on the table. Patient returned to the ward in poor condition.

The convalescence was uneventful and she was discharged relieved on the eighteenth day. On the day following operation the red blood count was 2,168,000; white count, 9,600; differential count: polymorphonuclears, 59%; small mononuclears, 25%; large mononuclears, 14%; eosinophiles, 1%; transitional, 1%. Pathological Report—Tubal pregnancy. Normal splenic tissue.

Case 4. Annie S.; age, 19. Admitted to the Boston City Hospital July 31, 1918. Admission Diagnoses—Fractured skull and ruptured viscus. History of Injury—Patient was said to have fallen from a second floor veranda while fighting with her sister. She was brought to the hospital at once. Physical Examination—A fairly well developed and nourished young woman unconscious and in a state of severe shock. Her pulse was thready and the mucous membranes very pale. There was a contusion over the left eye. Local Examination—Abdomen rigid throughout. Dullness in both flanks, more marked on the left. The left flank was extremely tender with costrovertebral tenderness and spasm. Patient considered unfit for operation and was sent to the ward for shock treatment. After two hours, she was fully conscious and complained of pain in the left side and difficulty in breathing. Her pulse was very weak and so rapid that a count could not be made. The flanks were flat on percussion; urine, catheter specimen, was bloody. Diagnosis—Ruptured left kidney. Operation advised.

Operation—Abdomen opened through a high midline incision. Peritoneal cavity filled with fresh blood and clots. The blood was sponged out, revealing hemorrhage from the left kidney. Examination of kidney showed a tear through the middle. Nephrectomy done. Bleeding persisted from the region of the spleen, which was ruptured near the hylus. Splenectomy. Abdomen closed with a drain to the site of the kidney; 1500 c.c. salt solution given intravenously on the table.

The convalescence was marked by weakness, a rise in pulse and temperature to the fourth day, when they gradually fell to normal, and the draining of blood-stained fluid. After two weeks the red blood count was 2,000,000 and the hemoglobin 65%. Discharged relieved on August 22, 1919.

Case 5. James B; age, 38. Admitted to the Boston City Hospital on August 7, 1919. History of Injury—Patient stated that on August 2, while standing at the door of his home after supper, he was suddenly seized with pain on the right side of his abdomen and fell to the floor. He did not vomit or purge, or lose consciousness. He got to bed and the family doctor was called, but did not see him until the following day, when he stated that he was suffering from overindulgence in smoking. The pain in his side was relieved by drugs, but he complained of thirst and grew weaker. He was unable to eat, and his wife noticed that he was paler than normal. The doctor was called again and he advised sending the man to hospital for a "gall stone operation," the pain and tenderness being on the right side. Physical Examination—A well developed and nourished man in some shock, complaining of pain in the right side and difficulty in breathing. He had thirst and a sense of suffocation. Temperature, 97° F.; pulse, 140; respiration, 22 and shallow; Mucous membranes pale; abdomen board-like, with no visible tumors or peristalsis; there was marked spasm and tenderness over the right upper quadrant. There was evidence of fluid in the flanks. The liver and spleen could not be palpated. Urine and feces negative for blood. Examination otherwise negative. Diagnosis—Perforated gall-bladder.

Operation—Abdomen opened by a high right rectus incision. A large amount of old blood found in the peritoneal cavity. Exploration of liver, gall-bladder and stomach revealed nothing abnormal. The splenic area was filled with a large amount of thick and tenacious blood clot with apparently a large, boggy spleen. On bringing this mass to the surface it was found to be mixed clot and splenic tissue. Splenectomy. Abdomen closed without drainage; 1000 c.c. intravenous salt solution administered on table. Four days later he was found sitting up in bed reading a paper, and said he felt fine. The pulse and temperature were normal. He was eating and sleeping well. On the eighth day the stitches were removed; wound clean. On close questioning at this time, the patient said that on August 2nd he was seized with a sharp pain in the left side while attempting to lift a sixty-pound tub from the floor to a high shelf at his home. He did not connect this pain with his present illness, because the latter pain was on the right side. Discharged relieved.

A review of the above five cases brings out several interesting points in connection with the results obtained. It will be noted that Case 1 was not operated until nine days after injury, and that during that time he must have had marked toxic absorption from blood in the abdomen and sepsis of the right arm as noted by his rise in temperature and pulse from 95.8° F. and 85 on admission, to 103° F. and 140 respectively at time of operation. I believe that delay in operating and the sepsis were the causes of death in this case.

Although Case 2 was operated as soon as possible after injury, both kidneys and spleen were severely lacerated, and the patient was depressed by alcohol. This case seems to have been hopeless from the beginning.

Case 3 is interesting because she fell at the station while suffering from a ruptured ectopic pregnancy and ruptured her spleen. Recovery from both these conditions, with much loss of blood, seems to me remarkable.

The fourth case deserves consideration because of the marked state of shock on admission; the severe lacerations of the spleen and left kidney; her extremely low condition at time of operation, and her quick return to normal after splenectomy and nephrectomy.

Case 5 probably received an intracapsular parenchymatous rupture of the spleen at the time of lifting the heavy weight to the shelf. The spleen became enlarged and finally ruptured through the capsule, spreading blood throughout the abdomen and producing the secondary pain on the right. His recovery, although operated six days after injury, is interesting when contrasted with Case 1, which was septic.

Of the other five cases on the hospital records, two were spontaneous ruptures in typhoid; one, proven by operation, and the other, by autopsy. The case operated had sudden rise in pulse from 140 to 150 and always had a temperature of 103° F. A splenectomy was done on the day of collapse, and the patient died twenty-four hours later. The third case was in extreme shock on admission, having fallen thirty feet from a live wire. After several hours under shock treatment, splenectomy was attempted, but the patient died on the table. The fourth was run over by an automobile; came to the hospital in shock, showing a fracture of the twelfth rib on the left. Splenectomy was done five hours after admission. Nine hours after operation a transfusion of 800 c.c. of whole blood was done, but the patient succumbed twenty-four hours later. The fifth case is interesting because of the severity of the injury and the rapid recovery. He was operated upon by Dr. F. B. Lund on the First Surgical Service. The police found the man lying in a pool of water on a rainy November morning. It was discovered later that he had jumped from the roof of a four-story building some time early that morning. He was brought to the hospital in extreme shock, unconscious, and apparently dying. A diagnosis of ruptured gut was made. A transfusion with 600 c.c. of whole blood was done by Dr. H. Q. Gallupe, followed immediately by splenectomy. The convalescence was uneventful.

A summary of the important facts of the ten cases shows that in only one was the diagnosis of ruptured spleen made before operation, and that was the case of typhoid. In all cases save one, the pulse at admission ranged from 120 to 160. In all, with the exception of the typhoid, the admission temperatures were subnormal; one as low as 95.8° F. Only one of the cases that recovered was transfused with whole blood; the other three had intravenous salt solution. All the patients were under forty-six years of age. Seven out of the ten showed no signs of external injury pointing to trauma of the spleen. Two of the remaining three had fractures of the ribs over the spleen; the other having only lower chest tenderness.

Conclusions:

Immediate operation is essential.

A subnormal temperature and a high pulse on admission are constant, due to shock, and most certainly are signs of internal hemorrhage, when there is a history of injury.

Injury to the spleen seems to occur more often before old age, which may be due in part to the fact that the spleen atrophies and becomes sclerosed after middle age.

Given a ruptured spleen, splenectomy is the operation of choice. Packing the spleen is inadvisable.

The reason for missing the diagnosis is mostly due to the fact that few, if any, outward signs of injury are found which would definitely point to trauma of the spleen.

Trauma of the spleen is probably due to the proximity to, and injury by, ribs, whether they are found to be fractured or not.

Differentiation between rupture of the spleen and rupture of a hollow viscus is often impossible.

REFERENCE.

[2] Barnes, Allen F.: Annals of Surgery, April, 1914.

RUPTURED UTERUS IN PREVIOUSLY CAESAREANIZED PATIENT; WITH REPORT OF CASE WHERE FOETUS REMAINED INTACT WITHIN MEMBRANES FOLLOWING RUPTURE.

By Charles J. Kickham, M.D., Boston,

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Rupture of the uterus on a previously Caesareanized patient has been given a great deal of attention of late and reports appear from time to time of this accident but, as far as I can ascertain from a review of the literature, there is a slight tendency to minimize the seriousness of the condition, in its broad relation to the subject of hysterotomy in the pregnant woman.

Nearly one hundred cases have been reported of this type of rupture and while this number is small, in comparison to the number of Caesareans done, it is a sufficient number to make us ponder over the condition. When once a patient has been Caesareanized, our course in a future pregnancy calls for calm judgment of the individual case. No conscientious obstetric surgeon desires to subject a patient to a second operation, if such can be avoided with safety; on the other hand no man wants to be confronted with such a grave complication as ruptured uterus if a repeated operation could have anticipated this accident. The question, for or against repeated Caesarean, rests or hinges on the integrity of the uterine scar or the tissues in the region of this scar. The leaning is one of optimism in regard to the integrity of the uterus following previous hysterotomy and I am sorry if I appear contrary or pessimisitc when I say that rarely am I confident of the strength of any previously hysterotomized uterus.

Novack[1] gives his opinion that about two to three per cent. of Caesareanized women have a rupture later and thus feels that since our accidents are so few we should not get unduly worried. With this I cannot agree, because a rupture under these conditions is so serious, with such a high mortality and followed as it usually is by hysterectomy, with the resultant prevention of future maternity.

To help decide the question as to the need of Caesarean on a once Caesareanized patient, Mason and Williams[2] have experimented with care on animals and as a result of their studies conclude that the rupture in this type of case does not come in the scar itself but in the tissues external to it; in other words, that the scar is as strong, if not stronger than the normal uterine muscle and therefore feel that where one is reasonably certain that no septic infection has taken place during the healing process, that a repeated operation is not needful, because the uterus should be able to stand the strain of at least normal contractions. This view is corroborated by Losee[3] when he says, "A perfectly healed wound leaves the myometrium as strong as before as far as can be determined by histological examination." But here is where we get at the nub of the question, "a perfectly healed wound," because in the same article Losee says, "The strength of the uterine scar after Caesarean section depends upon absence from the wound of infection and foreign material and perfect coaptation of the incised surfaces. . . . . If we were certain about complete union of the uterine wound, following primary section there would be no occasion for such anxiety because uterine muscle will regenerate completely if there has been perfect coaptation of incised tissues and if the cut surfaces once approximated are not separated by blood clot or lochia." It is just this "if" in the above quotation which makes the hazard great and our anxiety in a pregnancy following previous Caesarean justified.

If one could be sure that the uterine wound had healed by first intention and thus histologically sound, we would be justified in having little or any anxiety in a future pregnancy, but who could say that such a happy result had taken place in a given patient? In this connection Findlay[4] writes, "We are not justified in voicing the slogan, 'Once a Caesarean, always a Caesarean,' nor can we rely explicitly upon the integrity of the uterine scar in every case."

As well as the uterine scar resultant from previous hysterotomy, in a future pregnancy we must give consideration to the influence of the placenta. Some writers feel that the implantation of the placenta over the site of the uterine scar tends to weaken that scar and thus be a factor in subsequent rupture; others contend that if the scar is sound the effect of placental attachment is *nil*, or it is only the weak or imperfectly healed scar that is influenced by placental position, and this brings us back to the first principle in decision for or against repeated operation, *viz.*, the knowledge as to integrity of previous uterine scar. Since few wounds heal with such perfection as to be histologically perfect, we may have a postoperative convalescence free from all observable complications and thus make us reasonably certain that the wound has healed by first intention and such not be actually the case; a slight weakness may be present as a result of mild infection or imperfect coaptation of parts and since the position of placenta cannot be determined with any degree of certainty, we have this added complication to render our opinion of the strength of the scar more doubtful.

Again, in making our decision for or against secondary operation and time for that operation, if decided upon, we take into consideration the duration of pregnancy, as dated from last menstruation, as well as size of enlarged uterus as governed by size of foetus or amount of distention from amniotic fluid; and this is a strong point for or against repeated operation because, if we are reasonably sure of the integrity of the uterine scar and the uterus is not overdistended with fluid or large foetus, we may take more chances with uterine contractions and delivery by vaginal route. Unfortunately the degree of uterine distention or duration of pregnancy cannot always be a criterion of safety from rupture, as Kerr[5] had a case which ruptured at 30 weeks and my own case reported here was, according to the mother's count and not uncorroborated by size of uterus previous to rupture, that of only 30 weeks.

Primary Caesarean section is one of the most necessary operations in certain obstetrical conditions and in the avoidance of repeated operation, where possible, I heartily agree, but from my studies of the literature, as well as talks with my associates, I can come to only one conclusion; and that is, that no obstetrical surgeon can place too great confidence in the integrity of any previous scar, because too many factors enter into the case which might prevent perfect healing. Also, that every[4] writer will qualify his apparent faith in the healing of such wounds by noting that healing depends upon this or that, none of which can be determined, and thus the condition of the scar and it strength must be a matter of guess work.

Thus I suggest the old maxim, "An ounce of prevention," etc., in other words, as far as is possible in the individual case avoid the primary incision; I believe that hysterotomy should be done only in the odd case, where the indications are strong and after conservative deliberation by the obstetrician; that instead of extending our indications for this operation we should contract them. When the operation is decided upon the operator should not try for a time record but govern his speed by his experience and ability to do a good "job"; take the time to approximate wound surface accurately and exclude blood accumulation before tying sutures; make sure sutures are not tied too tightly and thus "cut out" or cause necrosis; all of these points being emphasized as means to prevent weakness in scar by improper healing. In the matter of infection I will say nothing, as all strive to eliminate that as far as possible.

In conclusion I repeat that primary Caesarean section should be done only after careful consideration of the future effect. Where one Caesarean has been done, if the postoperative convalescence has been normal and the uterus not overdistended, we may take a chance with normal contractions and vaginal delivery and be successful, always assuming that pelvis is normal in size and shape, but from my experience with this one case of rupture which gave so little warning and from examination of scars at repeated operation and noting many times how very thin and weak the tissues were in this region, I feel that in a pregnancy following previous Caesarean section our decision should be to operate, unless the evidence and our faith in the soundness of the previous scar are preponderant.

CASE REPORT.

Mrs. O'N. Aged 27. Para 3. Housewife. Family History—Negative. Past History—May, 1917, had Caesarean for eclampsia with dead baby. June, 1918, second Caesarean with living baby. Both operations done at private hospitals and convalescence normal. Otherwise history negative. Present Illness—Patient came under writer's care when about four months pregnant. Frequent examination showed all functions normal and abdominal scar in good condition; uterine scar, as far as could be determined, felt firm. Patient during progress of pregnancy enlarged normally and without abnormal symptoms. During antepartum period patient and husband instructed as to symptoms of rupture of uterus and particularly impressed with importance of sending for writer if any acute abdominal pain or unexpected symptoms occurred (this is mentioned as I feel my instructions on this point were responsible for my seeing the case shortly after rupture had taken place).

About four hours previous to operation patient had eaten a hearty meal, including several hot biscuits, which latter had on other occasions caused vomiting. Thus, when about one-half hour after this meal she had a cramp in lower abdomen and vomited, she assumed it was the result of this meal. Her husband, on returning, got the above history and, remembering my instructions, called the writer on the telephone and gave the above report. I decided to visit the house and arrived in about one-half hour. At this time patient was in bed and repeated history as above. She said she had no great pain, only a "severe cramp," and vomited once, and at present had a feeling of "irritation" over whole lower half of abdomen, with a constant desire to urinate.

Examination—Patient looks well and is laughing. Color excellent, pulse 75, good quality and regular; temperature 98.4° F. Inspection of abdomen showed normal contour for about 30 weeks' pregnancy (which she was, according to date of last menstruation). Palpation results were puzzling. The uterus could apparently be made out but not with a degree of certainty consistent with normal conditions; the uterine "wall" seemed lax and yet this "wall" seemed to enclose foetus; the foetus itself could be palpated with more than usual ease but not more so than many cases where patient has had repeated pregnancies; the foetus was not very freely movable and when pushed to one side or other would return as in normal abdominal ballottment. No foetal heart heard but patient said she felt movements. No vaginal discharge up to this first examination.

No vaginal examination made. Considering history, with practically no pain, general appearance and morale so good; no sign of hemorrhage or shock and on physical examination findings so puzzling, the question of proper diagnosis was in doubt. My diagnosis after weighing findings was probably a small rupture of uterus and while explaining this to husband and advising removal to hospital, patient had a small discharge of bright red blood. This confirmed provisional diagnosis in my mind and patient was removed to St. Elizabeth's Hospital at once. After entrance, I had the Obstetrical House Surgeon go over the abdomen, to check up my findings, and he gave it as his opinion that the foetus was clearly within the uterus and that the walls of uterus could be made out. With a tentative diagnosis of ruptured uterus I advised exploratory laparotomy and the husband and patient consented.

Operation—Median abdominal incision made, following line of previous skin scar; on opening peritoneum fresh blood welled out of wound; exploration showed foetus, still within its intact membranes, and placenta free in abdominal cavity; foetus delivered through abdominal wound before membranes ruptured. Intestines and peritoneum had normal appearance. Uterus was found contracted down into pelvis to about size of large grapefruit, with a rent, triangular in shape, on its anterior wall. Broad ligaments and vessels were ligated in usual way and supravaginal hysterectomy done. Drain inserted into pelvis and peritoneum and abdominal wall closed around drain in layers. In all, about ten ounces of fresh blood seemed to have been free in abdominal cavity. Patient made an uneventful recovery as far as her abdominal condition went, but on fourth day developed a phlebitis of left leg, which became very marked and caused much pain and septic temperature. Patient was discharged at end of three weeks in good condition. Examination at end of one month after discharge showed abdominal wound well healed and firm; no tenderness on palpation; general condition of patient excellent. The baby at birth showed no signs of life or pulsation in cord, but attempts at resuscitation were made for safety, but with no result. Baby weighed 4 pounds and 7 ounces.

Pathological Report (by Dr. Francis P. McCarthy, Director of Pathological Department, St. Elizabeth's Hospital)—Received uterus without cervix and with stumps of both Fallopian tubes. The uterus size of grapefruit;

measures 13 cm. in length; 12 cm. at its greatest width and 6 cm. thick. There is an area of rupture in the anterior wall of the uterus involving upper half, which is irregular in shape, resembling an inverted T. The extreme length of rupture is 6 cm.; laterally to the right 3 cm., and laterally to left 2 cm. The rupture gapes open from 2 to 3 cm. The rupture follows in general the side of one of two old scars, namely the one on the right. This old scar measures 9 cm. in length; second scar is to left of first about 2 cm. The placental site lies up in fundus and involves greater part of area of rupture. The uterine wall measures from 2 to 3 cm. in thickness, except at site of rupture, where it measures .5 to .7 cm. in thickness.

Pathological Diagnosis—Ruptured uterus.

COMMENT.

This case is interesting because of lack of symptoms on which to base definite diagnosis and because at operation foetus was found within its membranes, and all, including placenta, was free in abdominal cavity. It is a typical example as to how little real pain need accompany a rupture of the uterine wall, sufficient in extent to discharge uterine contents; it is an example of how, under these conditions, the uterine muscle may contract so quickly and with sufficient strength as to prevent excessive hemorrhage; it is proof that size of foetus, degree of uterine distention or supposed duration of pregnancy, as figured from date of last menstruation, are doubtful points in the prognosis of any previously hysterotomized uterus.

REFERENCES.

[1] Novack, E.: Rupture of Uterus through Caesarean Section Scar. Jour. A. M. A., July 13, 1918.
[2] Mason and Williams: Boston Medical and Surgical Journal, Vol. clxii, p. 65.
[3] Losee, J. R.: Am. Jour. of Obstet., Vol. lxxvi, No. 1.
[4] Findlay: Am. Jour. of Obstet., June, 1916.
[5] Kerr, Munson, quoted by Scott, W. A.: Am. Jour. of Obstet., Vol. xxvi, p. 423.

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Book Reviews.

Manual of Psychiatry. Edited by Aaron J. Rosanoff, M.D. Fifth Edition, Revised and Enlarged. New York: John Wiley & Sons. 1920.

The fifth edition of J. Rouges de Fursac's *Manuel de Psychiatrie* is here translated and edited by Dr. Rosanoff with additional material on psychological tests, social psychiatry and serology by various contributors. The volume is divided into general and special psychiatry and to these have been added appendices dealing with the technique of special diagnostic procedures, such as lumbar puncture, examination for aphasia, the development of and examination for intelligence, association tests, psychological group tests and the classification of mental diseases adopted by the American Psychological Association. The fact that this volume has gone through five editions both in the original and in an English translation, attests to its popularity; and for a brief descriptive treatise of mental disorders, we know of no more satisfactory work for the student or beginner in psychiatry. In the main, the classification of Kraepelin is adopted.

Manual of Emergencies. By J. Snowman, M.D., M.R.C.P., Lond. New York: William Wood & Co. 1919.

This *Manual of Emergencies,* based upon the English edition of Lenzmann's *Emergencies in Medical Practice,* represents the teaching of leading British authorities on medical, surgical, and obstetric emergencies. The general plan of Lenzmann's work has been followed by the author of this volume, but the subject matter has been entirely revised and the text rewritten. This book deals only with emergencies which are of sudden origin and dangerous to life; injuries such as fractures and dislocations are excluded. Diseases of various systems and organs are considered from the diagnostic and pathologic standpoints, and suggestions for treatment are offered. Among the subjects considered are: diseases of the respiratory system, including hemorrhage, obstruction in the respiratory tract, and dangerous pulmonary diseases; dangerous emergencies in diseases of the heart, such as cardiac asthma, syncopal attacks, rupture of the heart, and acute pericardial effusion; and nervous disease, such as shock, sudden loss of consciousness from various causes, or convulsions due to epilepsy or tetanus. Hemorrhages of the gastrointestinal tract, acute gastroenteritis, intussusception, strangulated hernia, and acute peritonitis or pancreatitis present dangerous emergency cases. In the case of the urinary organs, hemorrhage, retention or suppression of urine, and uraemia cause conditions often suddenly dangerous to life. The action of corrosive and irritant poisons, blood poisons, nerve poisons, food and serum poisons are explained, and symptoms and treatment are considered. Methods are discussed which have been found most successful in the treatment of such obstetric emergencies as hemorrhages of pregnancy, extrauterine gestation, acute inversion or rupture of the uterus, eclampsia, and asphyxia neonatorum. This book covers a wide range of subjects; it is a standard work of great practical value, and will be found useful in dealing with medical, surgical, and obstetrical emergencies.

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SMOKING AND FATIGUE.

THE usual method of studying the effects of smoking is the experimental, with the chemical analysis of the chief constituents of tobacco thrown in; or the clinical, in which the analysis of the symptoms of excessive smoking is largely a matter of observation. Experiment and pharmacological data are generally favored by most scientific men as furnishing the means of an impartial investigation and judgment, yet it is obvious that, medicine not being an exact science, the inferences to be drawn from so many different factors are capable of great abuse in the hands of clever reasoners who have some favorite hypothesis to maintain. It is, therefore, not surprising that the most recent pharmacological studies have supplied comparatively little that is new, and their results may be reduced to two simple propositions, namely, that nicotine generally raises the blood pressure. As a corollary to these it is stated that smoking raises the blood pressure.

Having reached this point we are at once in a world of pure assumptions. Thus it is assumed that a rise of blood pressure must be injurious, since it is one of the causes of arteriosclerosis. As a matter of fact, smoking does not invariably produce a rise of blood pressure; in many cases, on the contrary, it causes a fall. Competent observers, like Lee, have noted both, but there seems to be no certain method of accounting for the difference. In animal experiments, where tobacco smoke is drawn through salt solution or acetic acid, and injected into the veins, there is generally a rise of pressure; the mere physical effect of injecting a small volume of liquid is likely to increase the tension within the vessels. On the other hand, when the blood pressure is taken before and after smoking, the effect is variable; it may be a rise or fall. In explanation it is said that the effect is largely a matter of temperament or psychological, or some unknown factor, the kidneys, heart, or nervous system, may occasion the difference.

It is remarkable that few writers have even alluded to the *factor of fatigue*, or stated that a depressed condition of the muscles and nerve cells may modify an effect by no means constant under any conditions. It is true that the question has been asked, chiefly by French physicians, whether smoking is the cause of fatigue sometimes complained of by smokers? The answers to this question have been as varied as the effects of smoking itself. Putting aside the opinions of older writers—for example, Joly, Huchard, and Carnot—it is worth while to introduce here the practical observation on vast numbers of soldiers that smoking dispelled the crushing fatigue and depression known as "cafard," a form of exhaustion due to forced marches, digging trenches, sleeplessness, and other hardships of military life. In these circumstances tobacco had a bracing influence akin to that of food.

An effect somewhat similar has been observed in the case of workmen engaged in the heaviest kind of manual labor. In the complete absence of experimental data to explain the result, the best way seems to be that pointed out in the *Lancet* of July 17. "The question of labor efficiency in relation to tobacco smoking has been revived in a prominent fashion by the increasing practice of smoking in the workshops. It seems clear that in many cases the practice is tolerated by authority, and the anti-tobacco protagonists may be expected to put forward their case against this innovation, based on the ills to which it may give rise, when the evils of nicotine will be emphasized. But when all is said we must face the fact that those who have acquired the habit of smoking are more contented when permitted to indulge in it and are irritable when it is prohibited. Today the psychology of the worker is rightly receiving more and more attention, and a real and strong case must exist before anything which promotes contentment is prohibited. Smoking on an empty stomach,—for example, before breakfast and more than three hours after the last meal—seems to be felt injuriously by many subjects, while smokers generally appear to hold that smoking directly after meals promotes digestion; the belief is widespread and calls for consideration. The custom now rapidly increasing in industrial work of introducing short mid-morning and mid-afternoon pauses, during which light refreshment goes around—a practice recommended as long ago as 1861 by medical men—provides reasonable opportunities for allowing smoking. Cases have been quoted of increased output following permission to smoke; but we are not aware of any data of scientific value to justify or contradict this claim. The question, which is not without importance, calls for investigation, and we suggest, is worth the attention of the Industrial Fatigue Research Board"

This is one of the first attempts to study smoking from the industrial fatigue point of view. Some progress has been made in this direction by the authors of scientific management in workshops. It is admittedly a difficult problem of the day. To study the influences which affect the power of voluntary muscular work is to study the conditions which affect the activity of the mechanism, by which alone, man is able to express his thoughts and accomplish his purposes. Though the life of every man is largely devoted to an unconscious consideration of these problems we have still much to learn. The investigation is hampered by the multiplicity of the influences, and by the contradictory evidence given by men of different physique. One man is chiefly affected by changes in the weather; his neighbor, who is less sensitive to these changes, laughs at his conclusions, and, having a poor digestion, ascribes all to the effect of food. One man cites that a cigar helps him in his work, another feels from experience that a pipe or cigarette is more beneficial. As long as the answer to such questions rests on the slender basis of individual impressions and feelings, the uncertainty must continue.

With respect to industrial fatigue, the Italian physiologists, Mosso and Maggiora, observed that it was produced much more quickly in stormy weather. Lombard also found that the effects of smoking had an unfavorable influence on output during high temperature with much humidity. The individual unconsciously feels this effect, and is inclined to attribute it to tobacco. The relation of these factors to labor efficiency is still somewhat obscure, but the truth remains that smoking is only a contributory factor in fatigue. Moreover, in these experiments showing a loss of voluntary muscular power after smoking, recovery was always rapid, a fact which has led these authors to lay great stress on the periodicity of the fatigue. It might be argued from this periodical onset and the subsequent quick recovery of muscular power that tobacco was a means of muscular rest through its depressing or sedative action on the central nervous system.

In experiments of this kind on individual physiologists, not free from the influence of suggestion by their own consciousness, the conditions are wholly different from industrial fatigue, which, of course, is not voluntary. In fact, the worker's fatigue presents an entire contrast to the artificial conditions of the laboratory. In his case both mental and muscular work lessen muscular power. It is at this stage that he takes up his pipe or cigarette, that is to say, he is experiencing the action of smoking on muscles already tired, and not upon fresh muscles. The actual seat of the fatigue is a matter of primary importance, yet it has never been fully explained. The mechanism involved may be the muscles, or the nerve end-plates of the motor nerves, or the corresponding cells and fibres within the cord, or the nervous mechanism in the brain upon the activity of which the development of the muscular impulse depends. Experiment has shown, that, at the time when the voluntary muscular action is impossible, the muscles are still able to contract, to do enforced work, in short. Tobacco by its effect in preventing untimely and excessive muscular action, produces a state of repose. Again the nervous system may fatigue independently of the muscles. Hence, as tobacco acts almost wholly upon the nerves, it is reasonable to conjecture that the craving for its effects is unconsciously due to the need of the nervous system for rest. The actual cause of these effects, as most men seem dimly to perceive, lies in its depressing action exercised at the moment of fatigue. Translated into the language of ordinary life, this means the soothing, sedative action of tobacco, which all smokers know, though they are unable to account for it.

In the meantime, as the *Lancet* points out, the relation of smoking and labor efficiency requires further investigation. And the starting point of these investigations seems to be the actual conditions of the worker's life. Theoretical considerations such as Lombard's, on voluntary muscular action are of little use.

The difficult nature of the investigation may be seen from the recent work of Baumberger and Martin, "Fatigue and Efficiency of Smokers in a Strenuous Mental Occupation." They describe the "output" of a small group of Morse code telegraph operators, and conclude from data, which they call "meagre," that the output of heavy smokers is at first greater than that of moderate smokers, but that heavy smokers fail to maintain this lead. On the other hand, they state that, "On the whole, they (the data) constitute an argument in favor of moderation in the use of tobacco on the part of the industrial workers." The conclusion seems to be in accord with the *Lancet* suggestion.

With respect to the composition of tobacco smoke, no two chemists appear to get the same result. Chemical analysis, as R. Kissling has pointed out in a recent review in the *Chemiker Zeitung* (April 6, 1920), chemical analysis is not sufficient to explain the effects of smoking. A very comprehensive series of investigations is, therefore, necessary, and it is to be hoped that these will soon be forthcoming.

PAUL BARTHOLOW.

MATERNITY AID.

THE Massachusetts Medical Society has a resident membership of 3560. The Commission for the Investigation of the question of Maternity Benefits sent to each Fellow of the Society, a *questionnaire*, with the request for coöperation. The questions embodied the different proposals upon which the Commission was instructed to report its findings to the Legislature. Answers have been received from 959 Fellows. Of these 176 declined to express any opinion. Of the 783 who have given the Commission the benefit of their opinions, 540 favor and 243 oppose giving state aid in some form or other to childbearing women.

Owing to various transfers of membership from one district to another and to the delay in publishing the local directory, there may be some small inaccuracy in the following tabulation of the vote, but it serves to show the extent of interest taken in the subject, in proportion to the membership, in the different districts.

	TOTAL MEMBERSHIP	FAVOR	OPPOSE
Barnstable District	31	3	3
Berkshire District	83	13	5
Bristol North District ..	66	10	4
Bristol South District ..	138	14	17
Essex North District ..	175	27	11
Essex South District ...	228	25	13
Franklin District	40	5	2
Hampden District	235	35	9
Hampshire District	60	12	6
Middlesex East District .	77	14	13
Middlesex North District	108	22	6
Middlesex South District	511	88	38
Norfolk District	527	86	28
Norfolk South District ..	75	6	7
Plymouth District	107	12	16
Suffolk District	719	106	40
Worcester District	304	51	13
Worcester North District	88	10	12

In addition to these answers to the *questionnaire,* the Commission has been favored with the votes taken at several of the district society meetings, where the subject has been given more or less attention. According, very probably, to the way the question was presented, some have favored and some have opposed state action in the matter. But as only a small minority of the district membership, presumably, was present at these meetings, and furthermore, as contrary opinions were received from Fellows of these districts who were not present, it can easily be seen that the answers to the *questionnaire* ought to have greater weight in determining the attitude of the profession.

Many of the answers have included cogent reasons for favoring or opposing the various proposed ways of granting state aid. These have greatly helped the Commission in reaching the conclusions that will be presented to the Legislature. And it is regrettable that only so small a minority (less than 22%) of the Fellows of the Massachusetts Medical Society should have given their coöperation.

When the Legislature, instead of passing bills that would so seriously affect the practice of medicine, refers them and the whole subject of maternity benefits to a special commission for investigation, and when the Governor honors the Massachusetts Medical Society by appointing its president as chairman of the commission, it certainly would seem both a civic and a professional duty resting upon all the Fellows of the Society to give every possible assistance.

Had it been possible for me to be present at all of the district meetings and, when present, had there been time for full discussion of the question, there would doubtless have been a larger response to our request for the opinions of the profession. This failure has led to my suggestion that the district societies shall hold joint meetings in groups at least once a year, and on different dates, so that the officers of the parent society may have the opportunity to consult with all the Fellows upon matters requiring immediate and concerted action.

Alfred Worcester.

MEDICAL NOTES.

Appointment of Dr. Lewis Fetzer.—In order to take charge of the laboratories of St. Paul Sanitarium at Dallas, Texas, Dr. Lewis W. Fetzer has resigned as professor of physiology and pharmacology at the Baylor University College of Medicine.

BOSTON AND MASSACHUSETTS.

The Instructive District Nursing Association.—The Instructive District Nursing Association of Boston provides for sick persons in need of nursing care, trained nurses, who visit the homes of the patients, care for the sick, and teach families some of the simple rules of nursing and hygiene. Every call for assistance is met with the response of a nurse, although she continues caring for the patient only if a doctor is in attendance. Perhaps one of the most valuable services of the Association is the care taken of pregnant women; maternity patients are visited periodically before confinement and after delivery. A study of statistics comparing mothers who had pregnancy care with those who had not has shown that in 1919 the infant death rate was lowered sixty per cent. because this care was given. In Wards 1, 2, 3, 4, 25 and 26 of the City of Boston nurses are available to be present with the doctors at the time of confinement. In cases in which it is considered inadvisable by the doctor to send a patient to a hospital, or when a patient is not in a condition of chronic illness or will not require more than three days of continuous nursing, the Association furnishes special nurses for constant day or night service. In every ward of Boston the service of a visiting nurse is offered by the Association, and the staff of graduate public health nurses is at the call of any doctor or of any patient.

The thirty-fourth annual report of the Association, for the year 1919, shows a reduction of 5,557 patients over the preceding year, with, however, only 1,507 fewer visits paid. The greater part of the service rendered by the visiting nurses is in bedside care of the sick. Three new stations during 1919 has added fourteen during the year,—at Field's Corner, Blue Hill avenue, and at 359 Hanover street in the North End. In order to distribute calls more economically, the Association office at Bulfinch Place Church was discontinued, and the nurses transferred to the Health Unit at Blossom street and to the Hanover street station. The opening of new stations during 1919 has added fourteen nurses to the staff, now including one hundred and twenty-five nurses. The increase in new cases of influenza and pneumonia, in January and February, 1920, involving 14,827 visits, was the most difficult experience of the year. The Association was made the official home nursing agency for the city, and was assisted greatly by the Metropolitan Chapter of the Red Cross, and by public health nurses from the public schools, the out-patient department of the Boston Consumptives' Hospital, the Baby Hygiene Association, and the Board of Health. Under the leadership of Dr. Woodward, an Influenza Emergency Committee was formed and a plan of organization completed.

A total number of 26,789 patients, 23,582 of whom were new patients, were under the care of the Instructive District Nursing Association during 1919. Nursing visits, visits to pregnant women and babies, and other visits made a total number of 247,268 visits made by the nurses of the Association. In addition to its general home nursing service, the Association furnishes, for the benefit of Boston babies, nurses to give instruction to pregnant women, to be present at the time of confinement, to visit and care for mothers for ten days after delivery, to give clinical supervision to babies, and to follow the progress of younger children until they reach school age.

Week's Death Rate in Boston.—During the week ending November 6, 1920, the number of deaths reported was 184 against 186 last year, with a rate of 12.82* against 12.18 last year. There were 22 deaths under one year of age against 36 last year.

The number of cases of principal reportable diseases were: Diphtheria, 41; scarlet fever, 24; measles, 7; whooping cough, 17; typhoid fever, 2; tuberculosis, 41. Included in the above were the following cases of non-residents: Diphtheria, 5; scarlet fever, 3; typhoid fever, 1; tuberculosis, 12.

The total deaths from these diseases were: Scarlet fever, 2; typhoid fever, 1; tuberculosis, 12. Included in the above were the following non-residents: Tuberculosis, 3.

There were 2 cases of anterior poliomyelitis, with no deaths.

Annual Health Report of Haverhill.—The fortieth annual report of the Health Department of Haverhill for the year 1919, records the lowest mortality rate in the history of the city. The total number of deaths was 712, which gives a rate of 13.19 per 1,000 of population, and the average age of decedents was 42 years and 5 months. The previous lowest rate was 13.75 in 1915. A review of the mortality statistics since they were first compiled in 1880 shows that the average death rate for the past forty years was 16.13 per 1,000 of population. The new rate of 13.19 is the more remarkable when it is considered that during January and February, 1919, there were 155 deaths from influenza and pneumonia. The leading causes of death included the following diseases: arterial diseases, 85 deaths; organic diseases of the heart, 61; tuberculosis of the lungs, 54; influenza, 53; acute nephritis, Bright's disease, 33; pneumonia, all forms, and cancer, 29. For several years, chronic diseases have been becoming the more prominent causes of death, with infantile diarrhea and other acute diseases exceeded by heart, arterial, and other diseases. The infant mortality rate for the past year was 1.57 per 1,000 population, with 90 deaths; 43 of the deaths occurred among infants less than a month old. The total number of communicable diseases reported during 1919 was 2,499, with 184 deaths, as compared with 5,506 cases and 426 deaths in the previous year. Influenza and pneumonia have been the cause of a large increase in mortality during the past two years. In 1919 there were 14 deaths due to diphtheria; the histories of these cases show that parents still fail to heed or profit by the frequent recommendations of the Health Department in looking after the welfare of their children by calling a physician whenever they first show symptoms of illness. Twenty-one cases of typhoid fever were reported during the year, twelve of which were contracted in other places. There were reported 150 cases of tuberculosis, with 60 deaths.

An increase in the number of visiting nurses has made possible the extension of health supervision in the public schools of Haverhill. The Board of Health hopes that during the present year its activities in preventive medical work may be extended, and that clinics may be established both for the treatment of venereal patients and for the care and supervision of pregnant women.

The Haverhill Sanatorium cared for a total number of 104 patients during 1919, of whom five were in the incipient stage of tuberculosis, 22 moderately advanced, 61 markedly advanced, and 9 non-tuberculous.

NEW ENGLAND NOTES.

Report of the Board of Health of Portland, Maine.—The thirty-third annual report of the Board of Health of Portland, Maine, for the year 1919-1920, records, with the possible exception of the year 1917, the lowest death rate the city has experienced, in spite of the fact that the epidemic of influenza was practically at its height at the beginning of the year. For an estimated population of 68,718 there were 1,054 deaths from all causes, including deaths of non-residents, giving a rate of 15.3 per thousand. The birth-rate per one thousand population was 21.8. Typhoid fever caused 6 deaths, whooping cough, 11; diphtheria, 5; pulmonary tuberculosis, 59; cancer, 99; cerebral hemorrhage, 84; organic diseases of the heart, 115; influenza and pneumonia, 127; diarrhea and enteritis of infants under two years of age, 22. There were no deaths reported from scarlet fever or measles. The isolation hospital received during the year two diphtheria and 64 scarlet fever cases.

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* Estimated on the 1920 Federal census.

At the beginning of 1919 three nurses were in the employ of the Board of Health. These were kept busy attending cases of influenza during the first two months, after which they again took up anti-tuberculosis work and venereal disease control in the field and at the tuberculosis and venereal disease clinics conducted at the Edward Mason Dispensary. Responding to a strong local sentiment, the appropriation for the Board of Health was increased to permit additional nurses being engaged and a beginning made in child welfare work in the schools and at the home, as well as general instructive public health nursing. In co-operation with the principals and teachers practically every school up to and including the grammar grades is now being visited by a nurse from the health department. By carefully following up cases with home visits, repeated as often as may be necessary, a great many children have been taken to the family physician or referred to some appropriate clinic, either the Maine Eye and Ear Infirmary, the Children's Hospital or the Edward Mason Dispensary. At the Edward Mason Dispensary alone the year's attendance, including return visits to all clinics, was 9,551, an unprecedented number, and the increased attendance in large part composed of children.

Splendid work is being done by the Portland Baby Hygiene and Child Welfare Association at its milk station and clinic, at its station for under-nourished children and at its Day Nursery. During 1919 there were registered at the Milk Station 300 new babies, making a total registration of 407, with a clinic attendance of 1,695 for the year. Twenty-eight thousand, one hundred and seventy-two food formulae were put up by the nurses and distributed from the Milk Station. The Association engaged in two more child welfare activities during the year, namely, a day nursery, where for a small charge a working mother may have her children cared for during the working hours, and a milk station for under-nourished children up to twelve or thirteen years of age. There were 135 deaths of children under one year, an infant mortality rate of 90 per thousand births. Of these infant deaths, 37 per cent. occurred during the first week and 43 per cent. occurred in the first two weeks.

There were reported 62 stillbirths during the year. It is probable that a number of these, as well as many of the infant deaths due to congenital causes, might have been prevented by judicious care of the mothers during pregnancy. It is hoped that the Board of Health will be able to undertake this work through its public health nursing service in coöperation with existing clinics. There is need also, in Portland, of a free maternity hospital or ward, where skilled attendance can be given to those unable to pay for medical care.

Obituary.

FREDERIC HENRY GERRISH, M.D.

PORTLAND, MAINE (1845-1920).

Dr. Gerrish, a leader in medicine in Maine and in the United States, departed from the scenes of his labors on Wednesday, the eighth of September, 1920, at the age of 75, and after more than fifty years of practice. He was born in Portland March 21, 1845, and in his native city he died after ceaseless efforts for the advancement of medicine. From his father, Oliver Gerrish, a watchmaker and jeweller, he inherited that accuracy of detail which was his chief characteristic, and from his mother, Sarah Little, he inherited a love for anatomy, as evidenced in the career of Dr. Timothy Little, a great-uncle, who was an ardent anatomist a century ago, the man who when Nathan Smith started the Bowdoin Medical School in 1820, contributed largely to that institution from his rare preparations.

As a boy, young Gerrish began to be accurate in everything, and most of all, in his penmanship. Starting off with a large, round easily decipherable copper-plate handwriting, he continued it for life, making it rather smaller as years went on, and larger again as his eyes began to weary. No letter written by Dr. Gerrish contained a single word which could not be easily read, and better still, no prescription of his ever failed to be as plain as daylight to the patient, and to the druggist.

So, too, in school, he learned to draw, and this accomplishment although never carried through to artistic perfection, enabled him to enlighten his students and delight his friends; for, when lecturing on anatomy, if he came to a knotty point, he would turn to the blackboard and make plainer by sketch what he may have failed to make understood by merely illustrative words. Beyond this, he would charm his friends with pen drawings in the form of menu cards at medical banquets, the guests on taking their seats finding at hand a card with a sketch suggestive of their predilections. The professor of therapeutics would gaze at a shelf of bottles labelled with his favorite remedies; the surgeon would see himself sawing off a remnant of a femur; and the ophthalmologist would smile at a man holding over his shoulder a delicately drawn ophthalmoscope.

Dr. Gerrish was educated in the public schools of Portland, entered Bowdoin with a high examination rank, and was graduated with Phi Beta Kappa rank in the class of 1866.

He had always expressed his intention to be a physician and into the study of medicine he plunged eagerly for the next three years, and obtained his diploma in 1869. He neglected no branch, but gave most of his attention to anatomy; surgery found him a most zealous student and his graduating thesis, "The Caesarean Section," proved that his knowledge of that topic was practical. He settled then for practice in Portland, and gradually worked into a remunerative clientage. He was correct in diagnosis, and in expressing an opinion, but he never was too blunt to forget to be humorous in his way of putting difficult conditions before his patients. At this time he was made a teacher in the "Portland School for Medical Instruction," his work embracing various branches of medicine.

In 1873 he received a flattering call to the chair of therapeutics and materia medica from the medical school of the University of Michigan. This he accepted and filled satisfactorily for two years, after which he resigned owing to interruptions to his practice and was called to a similar position in the Bowdoin Medical School. He filled the position for three years, was then promoted to the chair of anatomy, which he occupied for twenty years, thence he went forward to the professorship of surgery, which he held many years, and finally was professor of medical ethics and so rounded out some forty-four years of fruitful activity in this institution.

As a lecturer he was inspiring. All of his students emphasize this. He loved his topics and inspired his students to love them so far as their mentality would allow. His language was easy to understand. He looked now at this man and now at that, and in so doing he attracted the interest of all. And, as has already been said, when language seemed to fail he would use his own hand-drawn illustrations. His arresting presence, his undoubted interest in what he had to say, and his graphic descriptions characterized his teaching throughout his long career. Mention may here be made of his original idea of coöperating with the other teachers, so that when he knew that the lecturer on physiology or on therapeutics was soon to speak on the physiology of the circulation, or the cardiac remedies, Dr. Gerrish would precede them with talks on the anatomy of the heart in its muscular and nervous details. In this way, the instructors and the students worked together, and worked ahead instead of some standing still and waiting for the others to catch up with their allied topics.

His brochure on the "Writing of Prescriptions for Students Unfamiliar with Latin," proved of great value to medical education everywhere, and his delightful address on the "Medical Dictionary," must be read to be appreciated and to understand how in the hands of a master at composition, so dull a theme, apparently, can be made attractive.

United with these forty years of teaching, were forty other years of intimate connection with the Maine General Hospital. He was secretary of the board of management for nine years, pathologist, overlapping those other years, for five more; and intermingled with these were twelve years as surgeon, twenty as consulting surgeon, and director for the last eleven years of his life. In other words, his was a guiding hand for all that time. Whatever of good the hospital did in those years for Maine, was largely due to his influence: in reducing the mortality by the introduction of Listerism; by constant attendance at the meetings of the staff and of the directors and by kindly courtesy and sympathy for all who sought the supreme gift of health from this noble institution. Nor should his efforts for a high standard of nursing be forgotten, for no nurse should waste her energies in mere housekeeping, nor on the other hand should she become so learned as to dispute with the physician concerning the care of the patients.

As an anatomist Dr. Gerrish will long be remembered not only by his teachings at Bowdoin, but by his classical textbook. It seemed wise to a group of American anatomists about 1890, that an American Anatomy should be founded, and Dr. Gerrish was chosen as its editor. Gathering about him a competent staff, they produced the desired work. Many of the illustrations were from French authorities, but those of the lymphatics and a large number of unique drawings of the insertions of the muscles were made by Dr. Gerrish. Two-thirds of the text also came from his pen, well expressed in plain phraseology. The work had a noteworthy reception, and an extensive sale and is still widely consulted. All in all, it is the chief monument to its editor and is likely long to continue as a trustworthy textbook. Finally, a paper on "Anatomical Nomenclature" about this time was of stirring scientific interest and revealed a careful knowledge of the need for greater accuracy in the names of many of the component parts of the human frame.

Dr. Gerrish was an excellent operator. He may have seemed at times slow and methodical, but such a fault, if really existing, probably arose from his early habits of speaking during operations for the benefit of students or practitioners. It seemed at times as if he were saying, "I incise here as the point of election; this incision must be carefully short; here I call attention to the exact anatomy of the parts"; and so on. His extreme accuracy in placing the sutures just so far apart, and of taking in just so much tissue, tended to produce firm apposition and a smooth cicatrix. He was a pioneer in Maine, in hysterectomy, appendectomy, and prostatectomy, and invariably contributed to the impetuous march of surgery of the day. Some of us can still recall a post-mortem examination which he made long ago in the case of a student who had died from "typhlitis," as appendicitis was then entitled. As he called attention to one point after another he said as he finally lifted the gangrenous appendix: "Some time, and that before long, we shall be removing the appendix by an early operation and so save many lives"; prophetic words indeed.

As a surgical writer also, he stood so high in the esteem of his contemporaries that he was invited to contribute papers on lymphatic surgery to the "Systems," of Keen, Dennis and Park. These monographs were valuable additions to the textbooks mentioned.

No notice of the career of Dr. Gerrish would be complete which failed to emphasize his early cultivation of Listerism. He utilized the new idea at once in hospital and private practice, and he was proud of his first series of twelve cancerous breasts about which, first and last, there was never visible a drop of pus nor in these cases did the temperature ever rise above ninety-nine. Not satisfied with this proof of the value of antiseptic surgery, he operated on one leg of a man with varicose veins by the Lister method and on the other leg, similarly affected, by ordinary methods and then showed the students the difference: the antiseptic leg was free of bandages in one week, whilst the other had to be treated for six, before the patient could be discharged.

Animated by such results as these he obtained from France the treatise of Lucas-Championnière on "Aseptic Surgery," translated and published it and when read, even today, it reveals the leadership of its translator in antiseptic surgery in the United States.

Thousands of physicians belong to innumerable societies, but most of these men are and remain lay figures on the lists of members. They may attend meetings, but they seldom contribute or discuss papers. With Dr. Gerrish it was different: he belonged to a society for the purpose of spreading abroad his views with the result that in most of the societies which he joined he ultimately became president.

He began his career in the Maine Medical Association with a modest paper on the microscope, and one on salicylic acid. After those he set out on his campaign for public health; for better sanitary conditions in Portland; a State Board of Health; an an anatomical law. As to the dangers of the venereal peril, to him belong the honors of the successful national crusade at last crowned with success after many years—he began it.

His paper on "Compensation of Physicians" in comparison with the princely incomes of lawyers and merchants was masterly. He early advocated the "Metrical System" and saw it largely adopted. His "oration" on the "Duties of the Medical Profession Toward Prostitution" was vigorous. Later on, turning back to surgical topics he wrote for the Association papers on prostatectomy, hysterectomy and appendectomy. He served on committees more than any other member and as chairman he was very successful in obtaining from obdurate legislators the laws which he insisted upon and literally commanded them to make. His presidency was marked by an advanced public health policy; as a writer of brief biographies of deceased members no one has ever surpassed him.

He was for years a beacon light in the American Academy of Medicine, wrote for its meetings multifariously on "Medical Education, "Sociology," "The Venereal Peril," "Hypnotism," and "Psychotherapy," whilst his address as president on "On the Best Equipment for Medical Study" was remarkable.

Before the American Therapeutic Society, of which, too, he was president, he read papers on the "Relations between Physicians and Pharmacists," and a prophetic essay on "Legal Control Needed in the Treatment of Drug Addicts."

Amongst his papers contributed to the Boston Medical and Surgical Journal notice should be taken of his extraordinary proposal of "The Use of Morphia Hypodermatically as a Substitute for Hanging," as well as other meritorious papers on "Urinary Calculi" and "Removal of the Uterus."

Bowdoin College owes much to him as an overseer for a series of years, and many recall the value and suggestions in his paper on the question, "Whether the Classes at Bowdoin Should be Large or Small," in which he favored smaller classes as easier to educate properly.

The Clinical Club was a society composed of twelve of the leading physicians of Portland and of this he was an active member, first and last. He was always present, and wrote his share of papers, amongst which may be included one on "The Capacity of the Bladder," a second on his favorite topic, "Prostatectomy," a third on "Public Health," a very remarkable essay on the "Hebrew Prophets," whom he considered psychotherapists, and a valuable pioneer paper on "Psychotherapy." To this particular essay, objection was made on the ground that medicine was medicine, and that the treatment of diseases by any other means was foolish. Dr. Gerrish, however, had his way and we now see how far in advance he was of his times. Of the delightful conversational powers, occasional verses, witty stories and amusing epithets exhibited by Dr. Gerrish at the supper following the reading of the papers at the Clinical, only a hint can be given.

The Fraternity Club was established in Portland forty years ago, Dr. Gerrish being one of the founders. Its ideal was a gathering together of men of wit, knowledge and literary ability, and the reading of papers calculated to bring out discussions. The papers of Dr. Gerrish for the Fraternity were always looked forward to with pleasure, for the members knew that something good was sure to be heard. His idea was to present to citizens of Portland medical papers that might be of value to the state. For this purpose he chose such topics as the "Need of Trained Nurses," "Marriage and Divorce," "Boards of Public Health," "The Mind Cure," "The Good of Insanity," "Animal Parasites of Man," "Cremation," and "Legalized Suicide of the Hopelessly Incurable."

Psychotherapy interested him from its first mention by Charcot, and he was the first to adopt it in Maine. He believed in it, his patients believed in him, and under its influence many people were made happy and relieved of suffering. So too, late in life, we have to recall the fact that he wrote for a "Symposium," on this topic a charming essay explaining its value in certain cases of nervous disease.

It may be said, in closing, that he was also much attracted to the question of "Sex Hygiene" and wrote a pamphlet concerning it, late in life. In it he called a spade a spade, but his English was so clean that the spade was never dirty. Toward the end of his life he was rather inclined to simplify spelling, but never urged others to adopt it.

He was a master of evanescent wit. His talk sparkled with touches of humor. He was fond of telling stories and always made his point. In this respect he was a past master. It is sad to hear people talk of his wonderful repartee, and yet when you ask them what he said they cannot remember a single word. Ears have they, yet they hear not: yet even a deaf man can recall this little gem!

A member of the Clinical Club who was rather proud of his papers with amusing contents, met Dr. Gerrish one morning on the day for the meeting of the Club and said jokingly to him, "Well, Gerrish, what sort of a paper are you looking for from me this evening?" "Delicatessen," flashed back Dr. Gerrish and walked off with a smile.

A man, by no means wise, came one evening to pick a quarrel with Dr. Gerrish if he could, and began in this way: "I hear that you said that I was not as wise as Solomon," and instantaneously Dr. Gerrish disarmed him by saying, "Well, are you?" The man had never a word to say and walked silently away.

He loved Malapropisms and in his letters he would pass them along. At a time when women wore long coats called ulsters, a woman complained to him of an "ulster" in her throat. "Yes," said he, "I understand, a sort of heavy coating." A male nurse at the hospital reported to him that a "patient's accounts of his sufferings were heartrend*ering*." "Yes," said the doctor, "what you might call Trying."

He was always sympathetic. He took, for instance, much trouble to put together for a patient with very bad eyes, a writing table with wires across by means of which the patient could write without using her eyes at all, and made her a present of it.

It happened once upon a time that a physician went West with his only son, leaving his wife to settle affairs and to follow on. One morning as the train with father and son was flying across the prairies, the boy, flushed by his first journey and the importance of youth, set off for the dining car ahead of his father. That car he never reached, for as he passed from one to another of the unvestibuled cars, he was blown off to instant death. The shocking news was sent first to friends in Portland and after much debate, Dr. Gerrish was asked to break to the mother the dreadful news. This he successfully accomplished and as the mother later said, "No other living man could have brought me so sympathetically that awful news, or have afterward so unselfishly comforted me in my hour of anguish."

Here then in broad outlines we note the career of a man remarkable in medicine. Much more might have been said, a larger number of papers might have been mentioned and analyzed, but enough have been chosen to give some idea of the great work which he accomplished. From many points of view he was a pioneer in public health. Views scoffed at when he first advanced them forty years ago are now a matter of daily benefit to the people.

Dr. Gerrish was married December 31, 1879, to Emily Manning Swan of Portland, who aided him graciously and steadily in his medical labors, and who now survives him.

J. A. S.

Correspondence.

PHYSICIANS AND LEGISLATION.

Worcester, November 1, 1920.

Mr. Editor:—

The Jeremiad of Dr. John B. Hawes on the little influence medical men have on legislative proceedings and the pessimistic attitude taken by our honored President lead me, by instinct an optimist, to open my mouth at possibly some sacrifice of my modesty.

Do gentlemen expect to obtain legislative action without hard work?

Do they expect that everything that appeals to them as right is instantly to be accepted by the legislative mind, absorbed by the legislative brain, and enacted into law without reflection? If so, they expect more than they will ever get, far more than any other body of men will obtain, or ever did obtain, and when they state that medical opinion has no influence with those who legislate for us, that practically no laws have been passed in our own state through the efforts of our legislative committees and our physicians, I beg most emphatically to differ with them.

Let us remember that the measures which appeal most to us are almost invariably opposed by strong interests adversely affected by them. Let us remember that legislators cannot remain in the Legislature unless kept there by the votes of their constituents. Let us remember that by no means every proposed law succeeds or fails on its merits only, whether it has to do with the practice of medicine or is entirely foreign to it, that human nature is human nature, that physicians are not always absolutely unselfish in their desires, and we may have more kindly feelings toward those whom we select to legislate for us.

When Dr. Hawes, in the Council meeting a year ago, condemned the attitude of legislators toward physicians, I rose in my seat and stated—and I wish to state it again—that but once in three years had I met with the slightest discourtesy, that I could find no fault with the general attitude of the members of the Legislature toward me and the society I represented and that our relations were those usual between gentlemen.

Have we done nothing?

In one year—1916-17—we greatly strengthened the narcotic law, obtained the passage of the present medical registration law, which lifted Massachusetts from the level of Mississippi to the top of the list, amended the workmen's compensation law against the most violent opposition, defeated the antivaccinationists and antivivisectionists, and had much to do with preventing the introduction of compulsory health insurance.

Had we no influence that year?

It was no slight feat to overturn a law which had placed a paid Board of three men in the position formerly occupied by an unpaid Board of Insanity with its paid executive secretary. Pessimists said it was impossible, but it was done and done by physicians and nobody else.

It took two years' hard work to accomplish it, but it *was* done. If the medical profession makes up its mind that it can accomplish nothing, it is lost, but there is no reason for any such belief. It has, it can, and it will accomplish great things, obtain the enactment of good laws and kill bad ones, but it will not do it by telling its legislative committees that they never did anything and never can do anything, by pulling back in the traces and not trying to bear its share in the load. Ripe fruit rarely falls into the mouths of the waiting populace unless somebody shakes the tree, and it is not stimulating to the shaker to be told that the fruit is nailed on and cannot be loosened from the bough.

Let Dr. Stone, who ably conducted the affairs of the Legislative Committee last year, and who thinks he did nothing, be comforted. Rome was not built in a day. Not all Legislatures are alike. Men change and so do their opinions.

It was a great misfortune that the President was unable to attend to legislative matters during the winter, for the very presence of the President of the Massachusetts Medical Society before a legislative committee carries weight, and no substitute, however able, can, in my opinion, take his place.

The members of the Massachusetts Medical Society can confidently believe that their Legislative Committees *do* get results, and if they assist them when called on, as many of them do, did, and will, they will accomplish even more in the future than they have been able to in the past.

Samuel B. Woodward.

MATERNITY AID.

46 St. John St., Jamaica Plain, Mass.

Mr. Editor:—

From the standpoint of the general practitioner, Dr. Bowers' bill for maternity aid is a disappointment. Does Dr. Bowers know that the doctors of the state are now handling and have been handling their maternity cases among the poor for a small fee or no fee at all?

Here is a chance for the state to recompense the doctors for work of this kind, either directly or indirectly: yet a bill is brought forward to turn this work over to hospitals that have been particularly uncharitable to the poor pregnant woman. Outside of the maternity department of the Boston City Hospital (a department which is a godsend to the people of Boston), I do not know of any lying-in hospital which will take in a pregnant woman free. They make a great flourish of their charity, but demand cash in advance. These alleged charity lying-in hospitals, with specialists and investigators, will be the ones to benefit by a bill such as Dr. Bowers'.

There is a close parallel in the preliminary working of the Workmen's Compensation Act and the Maternity Relief. Previous to the passage of the Workmen's Compensation Act the general practitioner did most of the factory surgery for small, or very often, no recompense. When the doctor had to be paid for this kind of work great interest was taken in the injured workmen. All kinds of subterfuges were employed so that today most of this work is in the hands of trained nurses, acting through surgeons, (presumably to cover the law), dispensaries and the outpatient departments of the various hospitals.

The insurance companies of the United States and England come under the head of the "sick poor," with the high approval of the men who are supposed to look out for the interests of the profession.

If the doctors were represented by men who know how hard conditions are in the profession, in short, if doctors rather than specialists represented us before the Legislature, our interests would be pushed to the front.

If there is to be a maternity relief bill it seems to me that it should be primarily for the needy pregnant woman. What the poor woman needs most in her time of trouble is money.

From a long medical experience among the poor of the city, I would respectfully suggest to Dr. Worcester that each pregnant woman in need be given the sum of $50.00. It does not seem to me that it would be necessary to establish any separate division of the state to administer the aid. The work covers exactly the same ground as the "Mothers' Aid" and could be easily amalgamated with that department of the State Board of Charity—a department that is excellently and economically conducted. Under the care of the modern and well-equipped physicians of the state, these cases will be handled in a very much better way than if they were driven to hospitals. I am sure the mortality rate will be lower and the respect and gratitude of these women to the state will be enhanced as compared to Dr. Bowers' plan.

Charles Malone, M.D.

INDUSTRIAL EXAMINATION OF CHILDREN.

Spencer, Mass., Nov. 1, 1920.

Mr. Editor:—

Kindly permit me to correct a statement in the issue of October 21, under "Medical Notes," page 500, subject: "Examination of Children for Industries," line seven reads, "In order to obtain a certificate, the child must present to the superintendent of the school a certificate signed by a physician appointed by the school committee."

The trend of the article seems to commend the placing of this most important work in the hands of one physician in each community. As a matter of fact, any registered physician may make these examinations and fill out these cards, as is shown by the following extract of the law, Chapter 779, Section 16, Acts of 1913, which provides as follows:

> "A certificate signed by a school or family physician or by a physician appointed by the school committee, stating that the child has been thoroughly examined by said physician and in his opinion is in sufficiently sound health and physically able to perform the work which the child intends to do."

In a certain town in this state, the fee for this service is fifty cents for each examination and the filling out of the card, payable only to the school physician. The five other phyicians in town fill out these cards, when requested to do so by the child, but receive no compensation for the same. It is simply an act of charity on their part. Is it any wonder that "an investigation of this matter has led to the discovery that in a great many cases certificates have been signed without any examination having been made, or that the examination has been so superficial as to be valueless"?

I have reason to believe that this condition of affairs is far from satisfactory to the Department of Labor and Industries of our state. There is no doubt in my mind that they have made a thorough investigation of the methods employed in the examination of children in nearly all the large industrial centers of our state and found that the appropriations made by local authorities for this important work were entirely inadequate. Furthermore, I believe that they learned at that time that thorough examinations were made in only a few communities.

Let us hope that the Legislature for 1921 will be requested to make some change in existing laws that will secure for the child an adequate and thorough examination before his entrance into industry.

George W. Ellison, ***School Physician,***
Town of Spencer.

RECENT DEATH.

Dr. Wallace Harlow Dean died at Springfield, Mass., April 10, 1920, at the age of 67. Dr. Dean was born in West Harland, Conn. He received a medical degree from Yale in 1877. He settled in Blanford, Mass., in 1877, and removed to Springfield in 1895. Dr. Dean was president of the Hampden District Medical Society from 1887 until his death. The cause of his death was lobar pneumonia.

The Boston Medical and Surgical Journal

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The Massachusetts Medical Society.

MEETING OF THE SECTION OF HOSPITAL ADMINISTRATION, JUNE 9, 1920

What Should be the Attitude of the State toward Hospital Standardization?

By Michael F. Fallon, M.D., Worcester, Mass.,
Member Massachusetts Board of Registration in Medicine.

Dr. Osler, in an address, "The Hospital as a College," in 1903, said: "In the last quarter of the last century, the improvement in the teaching of medicine has been in three directions: in demanding of the student a better general education; in lengthening the period of professional study; and in substituting laboratories for lecture rooms, that is to say, in the replacement of theoretical by practical teaching. The problem before us as teachers may be very briefly stated: to give to our students an education of such a character that they can become sensible practitioners—the destiny of seven-eighths of them."[1]

So spake the master, Dr. Osler, in summing up the improvements in the teaching of the science and art of medicine during the last quarter of the last century. And now, as the first quarter of the present century is nearing its close, we may look for an improvement in the practice of medicine on exactly these same lines.

Medical educators in this country are at present quite unanimous in the opinion that it is necessary to lengthen the period of professional study by adding one year to the medical curriculum, and that this year should be a year of practical study.

The Federation of the State Medical License Boards of the United States, one of whose functions is the study of ways and means whereby the physician may better serve the people, after due deliberation, on March 3, 1920, unanimously passed the following resolution:

"The Federation of State Medical Boards of the United States reaffirms its recommendation that all graduates in medicine applying for admission to State Board examinations shall have had prior to any such examination at least one year of interneship.

"And it is further recommended that such interneship be taken in a hospital which is organized on the basis of including medical, surgical, obstetrical and laboratory departments, including pathologic, clinical and x-ray units."[2a]

The hospital interne year has already been adopted as an essential qualification for license to practice in ten states.[3] And also, eight medical schools have already adopted the requirement of an interne year for the degree of M.D.[2b]

Massachusetts should have stronger medical educational safeguards than she now has, since "applicants are floating to states, Massachusetts for example, in which adequate medical safeguards have not been provided,"[4b] and, "in 1918, Massachusetts had an increase in the number of registrations regardless of the general decrease in the majority of states.

Massachusetts was one af the states which also, in 1919, showed an increase beyond what would be expected by the general increase. Since Massachusetts does not have reciprocal relations with other states, this increase is apparently due to the faulty medical practice act in that state, where the board is not given authority to refuse recognition to low grade medical colleges, and cannot insist on reasonable standards of preliminary education."[4a]

"Ill fares the land, to hastenings ills a prey,
Where quacks accumulate, and men decay."

"In Massachusetts, there are one hundred and twelve hospitals with a total number of ten thousand three hundred and twenty-one beds, and a yearly number of one hundred seventy-nine thousand, six hundred and forty-seven patients."[5]

Perhaps no man can speak more authoritatively on hospitals in this community than Dr. John T. Bottomley. He says, "Direction, not destruction, is our aim, and it is our bounden duty to see that the public faith and the public trust are properly and honestly directed. We should no longer stand silently by and see them betrayed and violated as they have been and are being most shamefully betrayed and violated by many men of our profession who have used, or rather, misused the names "physician" and "hospital" to lure unsuspecting patients into institutions and establishments where dangerous and often fatal inefficiency prevails. Appeals to professional honor and conscience, and efforts to influence the hospital management are entirely useless in such instances. We must educate the public to recognize such physicians and such institutions, and to shun them as they deserve to be shunned."[6]

Dr. Edward Martin of Philadelphia testifies to the good results of the fifth, or interneship year as a requirement for state licenses. He says, "Now, when a man graduates from a medical school, he is only 20 per cent. efficient to his community. But when, in addition, he is trained in a good hospital, he is competent. A teaching hospital means to the community 80 per cent. efficiency of such a man. . . . . In Pennsylvania, we do not allow a man to practise medicine until he has completed one year's interneship in a hospital. I hope that such a requirement will soon exist in every state in the Union.

"Why do we want men 20 per cent. fit when we can have them 100 per cent. fit? Now, Dr. Baldy's idea is that the function of a state board is to protect a community by requiring sound training of its medical practitioners."[7]

One of the best authorities on medical education in the United States is Dr. A. D. Bevan, President of the American Medican Association, and father of the Council on Medical Education. He says:

"Without question, we must provide a year of training in a hospital for medical students before they begin to do independent practice.

"In Rush Medical College, 98 per cent. of the men for many years have had the intern year training before they began to practice. That is true in our better schools, but it ought to be made compulsory throughout the entire United States. I think that state licensing boards for the protection of the public, should make the intern year a requirement, or before a man passes his examination for licensure."[8]

Hence, any measure that seeks the health-betterment of the community is a matter of concern to the State License Board, and since this proposed obligatory fifth or hospital year for the medical student promises to be a valuable asset in conserving and promoting the health of the people, it is worthy of our serious study.

This proposed measure of a required fifth interneship year does not at all mean the control of all hospitals by the state, but it does mean that certain hospitals which are fit may be selected for teaching of medical students. The selection of such hospitals will be based on merit; and all hospitals may strive to fit themselves for teaching responsibilities.

How, then, will such a hospital interne year affect hospital standardization? It, perhaps, will compel a higher degree of efficiency in hospitals than any other agency would; and it will accomplish this by encouraging the staff members to fit themselves as teachers.

What conduces mostly to the welfare of the patient—the goal of all hospitals? Is it the palatial buildings, or the material adjuncts such as elaborate operating rooms? No! The efficiency of our hospital work in the shack buildings during our late war answers this. Brains, not bricks, make the hospital. The man rather than the material. And, in judging the efficiency of the hospital, the moral and educational standing of the member of the staff should be the first consideration. Let us not forget the remarkable research work made by such men as Koch, Pasteur, and our own Trudeau with, at times, a paucity of material at their command. I sometimes think that there may be danger to a hospital, as to a man, of becoming surfeited with wealth.

Perhaps the most successful hospital in this country, St. Mary's Hospital, in Rochester, Minnesota, had a staff of a few doctors, the Doctors Mayo,—father and sons,—far from wealthy, "devoted to science, living for investigation, and caring nothing for the lust of the eyes, and the pride of life,"[9] together with a nurses' staff of Sister-nurses.

The devotion of the members of a hospital staff to humanity and science; the subordination of science to the welfare of the patient; the ethical judgment in not regarding a human being as an animated test tube; a proper preparation for their various specialties; the ability and the desire "to teach the young all that they themselves had been taught, with all that their own experience had added," all of these are essentials in the standardization of a hospital. And the state, in protecting the health of the citizens, may select hospitals with such staffs for the training of the young doctor. But the state, in its selection of approved or teaching hospitals, should not be the harsh master, but rather the encouraging counsellor. Nor, should the classification of hospitals be on the cold, statistical A, B, and C plan.

Dr. Baldy, chairman of the State Board of Licensure of Pennsylvania, said concerning the new method of classification in that state:

"The classification is on an entirely new basis, and many of the hospitals that were on the list will be found missing. We have felt in Pennsylvania, and the hospitals have impressed upon us the fact, that the classification into A, B and C is not fair for such institutions. We now classify hospitals on the basis that an approved hospital must make provision for medicine, medical specialties; surgery, surgical specialties; obstetrics, laboratory and anesthetic department specialties, and so forth."[2c]

Classification may be explained on the basis of full credit for a normal general hospital—and yet, limited credit to the hospital that may deserve it; and thus the state will encourage hospitals to fit themselves for the receiving of internes. The status of the interne will be different from what it is at present. The present status of the interne is frequently chaotic. Under the proposed system, the interne will still be a student, and under the supervision of the medical school authorities. And again, the quality of his interneship will determine the granting of his state license. Such a status of the interne will be a Utopia for the hospital and all connected with it, and the profit accruing to the interne himself under authoritative guidance will be immeasurably greater than it is at present.

Dr. E. P. Lyon, Dean of the Medical School, University of Minnesota, says, "When you consider how much the medical school fifth year requirement would do for the hospitals in keeping the interne on the job, maintaining his scholarly attitude, etc. (inasmuch as his M.D. degree would depend on good work in the interne year)—when you consider these matters, you surgeons should recognize how great is your duty to bring proper conditions as regards interne training into your hospitals. Nor is this duty wholly altruistic, for you all know how much the success of your work depends on the intelligence, training, interest, faithfulness and hard work of the interne."[10]

The objection may be made that the addition of the proposed fifth or hospital year may lengthen an already long curriculum. But since 90 per cent. of all graduates already voluntarily serve a fifth or hospital year, the new requirement will impose no hardship on the student.[2d]

We cannot shorten our medical course, but we may shorten our premedical course. Probably the ideal premedical preparation, if the boy could be started early enough, would be a college education with due recognition of both the classics and sciences.

Concerning the value of such training, witness the experiences of Doctors William Mayo, President, and Franklin H. Martin, Secretary-General of the American College of Surgeons, who recently, as representatives of the American College of Surgeons, visited most of the countries of South America. They met and interviewed some of the leading surgeons, and inspected the hospitals.

Dr. Martin says, "Dr. Marcelino Herrera Vegas, who is easily the dean of surgery of the southern continent, is a man whom it is an exceptional honor to know. . . . . We, in rapid-fire America must seem crude and immature in comparison with the associates of this man who reads his classics, and who has gained for himself a knowledge of the best of the ages. . . . . We must lay aside our provincial airs, and our cock-suredness, and be willing to broaden out as they have done, learn their language as they have learned ours. . . . .

"After visiting a few of these wonderful countries, the United States grows smaller in one's estimation, and the only way we can keep it big is to be willing to broaden out as citizens. . . . . Remember that they have hospitals which are equal to our best, and most of them are much more attractive. . . . . Remember that you are associating with a man from a country where a classical education is the prerequisite of a gentleman."[11]

Such testimony as to the pre-requisites for a medical education is timely, and it is appropriate to the subject of this essay since, as Dr. E. P. Lyon has well said, "The first and fundamental change required, before hospitals can be standardized, is a recognition on the part of the staff of their educational responsibilities."

But since the ideal premedical preparation may not always be practical in "rapid-fire America," the course could be shortened by modifying the grammar and high school courses so that a boy could be premedically prepared to enter the medical school at an age when he is a year or two older than the age at which he now enters college.

I have often thought that in arranging the premedical and even the medical studies, the medical school authorities and the members of the State license boards might with profit consult the general practitioners. They are in the majority—seven eighths—of the medical graduates. They are the "noblest Romans of them all." "The family doctor, the essential factor in the battle—humanly speaking, with him are the issues of life and death, since upon him falls the grievous responsibility in those terrible emergencies which bring darkness and despair to so many households."[12]

What should be the state's attitude on hospital standardization with reference to the specialties? The future has in store marked changes in the status of the specialist, and it will come to pass that recognition of a specialist will be given to him who has served a proper apprenticeship.

"The Mayo Foundation for Research" is preparing specialists in a proper way. So are our medical schools although perhaps not as systematically.

Dr. William Mayo's comment on the graduate's or specialist's preparation in South America indicates what will be the future status of the specialties in our country. He says, "Their medical schools are splendid institutions with a seven-year course, and are equal in equipment and methods of theoretic teaching to any in the world. In South America, "Commencement Day" means just that, for after graduating, the young surgeon begins a special course for surgical training. Instead of carving his way to knowledge and experience by the scalpel, he is tutored for a period of from eight to ten years along lines which we of the United States have accepted only recently under the general term of fellowships in graduate medicine and surgery."[13]

SUMMARY.

Medical educators and the Medical State License Boards of the United States recommend that a fifth year be added to the medical course; that this year be a practical or hospital year; and that it be a requirement for the state license.

This fifth or interne year is already voluntarily served by 90 per cent. of medical graduates; but under the proposed method, this year will be under authoritative, educational supervision.

In those states, notably Pennsylvania, in which this educational, fifth, or interne year has been adopted, hospital authorities are stimulated to attain to high standards, since they strive to be among the approved hospitals, and to be considered fit to receive and educate medical students.

Since a proper guidance of all the factors that make a hospital—the nurses, the laboratories and all hospital technicians—can come only from a rightly educated staff; and since the proposed educational interne year will stimulate the members of the hospital staffs to attain to the highest standards, the adoption of this educational intern year is worthy of the serious consideration of the physicians and people of Massachusetts.

REFERENCES.

[1] Aequanimitas, Academy of Medicine, New York, p. 329.

[2a] Monthly Bulletin, Federation State Medical Boards, Vol. vi, No. 3, March, 1920, p. 67.

[2b] Monthly Bulletin, Vol. iii, August, 1919, p. 170. (Univ. Minnesota Medical School, Leland Stanford, Jr., Univ. School of Medicine, Rush Medical College, Univ. of California Med. School, Northwestern Univ. Med. School, Univ. of Vermont Med. School, College of Physicians and Surgeons, Los Angeles, Columbia Univ. College of Physicians and Surgeons, New York.)

[2c] Mo. Bulletin, State Medical Boards, March, 1920, p. 64.

[2d] Mo. Bulletin, State Medical Boards, August, 1919, p. 170.

[3] Journal A. M. A., April 17, 1920, p. 1100, State Board No. (Pennsylvania, New Jersey, Alaska, Rhode Island, No. Dakota, Washington, Illinois, Michigan, Iowa and Texas.)

[4a] Jour. A. M. A., State Board No., April 17, 1920, p. 1096.

[4b] Jour. A. M. A., State Board No., April 17, 1920, p. 1101.

[5] Bulletin American College Surgeons, Vol. iv, No. 4, January, 1920, p. 21.

[6] Hospital Progress, May, 1920, p. 6.

[7] Bulletin American College Surgeons, Vol. iii, No. 1, p. 12.

[8] Monthly Bulletin, Federation State Medical Boards, Vol. v, 1919, p. 108.

[9] Osler, Teacher and Student, Aequanimitas, p. 29.

[10] Bulletin American College of Surgeons, Vol. iii, No. 1, p. 49.

[11] Surgery, Gynecology, and Obstetrics, May, 1920.

[12] Educational Value of Medical Schools, Osler, Aequanimitas, p. 342.

[13] Surgery, Gynecology, and Obstetrics, May, 1920.

DISCUSSION.

Dr. W. P. Bowers, Clinton: The keynote of this paper is the addition of a fifth year of interneship to the regular medical course in order to raise the standard of hospital administration. That, under the recommendation of the paper, is to be brought about by the amendment of the present state law so that Massachusetts can follow the plan that has been adopted in many other states of requiring as a prerequisite to registration an education which comprises the fifth, or interne year. That, under present conditions, is not practicable in Massachusetts, I am sorry to say.

Massachusetts has what is known as the "single standard." By that is meant that all candidates for licensure in Massachusetts simply have to be graduates of a medical institution which gives a four years' course and nothing more. That is, a person who has fulfilled this requirement is eligible for examination, and if he passes, he is registered. As you know, this matter has been very carefully studied by the Committee on Medical Education of your Society, and after repeated attempts to have the law amended to make it stronger, this committee of your Society again took up the matter last winter and formulated a bill to be presented to the Legislature which should require that all applicants should have a preliminary educational course of at least two years equal to that of a college of liberal arts.

It was deemed unwise to attempt the addition of the year's interneship because a considerable proportion of the people who apply for registration in Massachusetts have not available the facilities of the interne year. For instance all osteopaths who have had a four years' course of instruction are eligible for examination. They are not eligible, however, for interne service in those hospitals which would be recognized as suitable for such training. Under these circumstances the law would have to be materially changed before it would be possible to require an interneship year as a prerequisite to an examination for licensure and it was therefore deemed best to start this other scheme at the other end of the line and require that every applicant for registration should have had a preliminary education.

The argument for that is that medicine is so complex and requires so much intellectual development to comprehend that every person who undertakes to study medicine should have had a course of two years equal to that given in a college of liberal arts in order to properly absorb the instruction given in a medical school. That would make it necessary for the College of Physicians and Surgeons and the Middlesex College to make their preliminary requirements for matriculation equivalent to the two years referred to.

So it seems to me that until you radically revise this law, not much progress can be made and I would like to state at this time that it is no easy matter to secure a revision of laws relating to medical practice in Massachusetts. It is interesting to note that the influence of one lone woman defeated the efforts of your committees on medical education and legislation cooperating with a committee of forty physicians, to make the legislators see the value of a premedical education. This woman is in the College of Physicians and Surgeons and she told the legislators that the purpose of the bill would deprive her of the privilege of coming up for registration after graduation, and the chivalry of your legislators was such that they opposed the passage of such legislation.

Now it seems to me that since this question of hospital standardization is before us it should be considered from another standpoint than the addition of the fifth interneship year, because you cannot consider all the hospitals in the state as educational institutions, that is, so far as interneships are concerned, and if you pass a law requiring applicants for registration to have had a year in a hospital as interne, that would not apply to a considerable number of our hospitals in the state which need standardization more than some of the larger and better institutions of this class.

The State of Massachusetts has adopted the policy of protecting its citizens where they are unable to protect themselves. The state has officials to watch over your foods and drugs; it sees that your measures are standardized, and in these ways it protects the people from the various frauds which are apt to enter into commercial life. It goes further. It tries to protect the people against the hazards of industry and accidents of various sorts. It helps protect the people from disease and injury but fails to see the importance of elevating the standards of medical practice.

Now if there are grounds for the criticisms of hospitals that crop up from time to time, for instance the one that recently appeared in the press that certain irregularities exist in hospitals, if these things exist, they call for some standardization of hospitals as a direct state activity connected either with the Department of Public Health or through a reorganization of the Board of Registration in Medicine, and if you get a few more men like Dr. Fallon and Dr. Prior on that Board you will see some results. If you can have a reorganized Board made up of men competent to deal with this question of standardization and give them money enough, you can then bring the doubtful hospitals up to a good standard. I think that criticisms are directed more frequently to those hospitals which are founded with the very best of motives and for good purposes, but which in the course of their evolution, before they attain to the standing of these larger hospitals, are sometimes guilty of practices not up to higher standards.

It seems to me, in addition to this plan which has been suggested, and which is most valuable, but which according to the Massachusetts standards could not be put into effect at the present time, the institution of some regular, organized and efficient inspection of hospitals would be most useful in raising many hospitals to a higher standard.

Dr. F. J. Cotton, Boston: There is one question I would like to ask which is only more or less germane to this matter. I wonder if we could have Dr. Fallon say something about this "legalized murder" thing which appeared in the press and which has had a bad effect on the internes. In this state we are holding internes in hospitals on the basis of giving them what they want, as far as we can. Necessarily a good deal of operating, mostly minor, has to be turned over to internes, but generally speaking, it is pretty carefully supervised. It is about the only chance they have under present conditions to do very much until they get out and work for themselves. I see no way of getting decent training to these men other than having them operate under instruction.

I am not criticising Dr. Fallon, but I would like a statement as to what he believes and not what the newspaper told us, because I know it has started up a good deal of feeling in my own hospital, and it is just as well not to have that feeling. Of course this is only a side issue, but I think it should be cleared up.

Dr. C. E. Mongan, Somerville: I was much interested in what Dr. Fallon said of shortening the time of premedical study so that the student course might be shorter in total number of years than it is at present, and in order that the student may become a practitioner earlier than is possible today.

All these questions are very complicated, and here is a further complication in this question in that it has an industrial bearing. There is one large organization in industry in this state which arbitrarily rejects applicants for work if the applicant is over forty-five years of age. That means in that organization which employs a number of highly skilled men that a man is industrially dead at forty-five. That means that the children of that class of men have not the same opportunity financially for entering medicine or any other profession, if their father, the earning part of the household, is cut off at that age. Now that is why the pre-medical education should be shortened. As Dr. Fallon says, you might shorten it in the grammar school, or cut out something in the high school. Youths go to Technology at eighteen years of age. Four or five years later, when they are twenty-two or twenty-three years old, they are fitted to take up their life work in highly specialized departments. The same thing can be done in medicine, and I think it ought to be done in justice to the children of those men whose limit of industry is put at forty-five, whose earning power ceases then. These questions are complicated. It is not simply the thing of saying you shall have so many years of medical study in the hospital, in the medical school, because you are brought up against conditions which sometimes make this impossible, so if we could rearrange our whole scheme, and if industrial work is to play the part in medicine that it is going to play, we will have to change our whole curriculum in medical education.

Dr. Fallon, in closing: There was recently a convention of all the medical boards of New England at the State House. The speaker of the occasion was the Assistant District Attorney. A reporter was there. He reported the subject of the Assistant District Attorney's talk. The various delegates to this convention spoke afterwards. I supposed that the Attorney's talk would be reported, but I did not know that any member's talk would be reported. Had I known that, I would have corrected the newspaper reporter's version of my words.

I said, and Dr. Bowers will bear me out on this, that unwarranted surgery is being done in this State of Massachusetts; that if a man who is incompetent and unprepared does a major or any other operation with resulting death to the patient, that that is murder, and since the law protects the man, it is legalized murder. I still say so,—that if a man is unprepared and incompetent to do surgery, whether within the walls of the hospital, or outside, and if that patient dies, the man who did the operation has committed murder.

Several such cases have come to my knowledge within the past winter. I know of one case where a man, a general practitioner who did not have special surgical training, took out the tonsils of a child, and the child died. This practitioner had no other doctor there. He handed the ether cone over to a bystander. The child died then and there. If that case had been reported to the Board of Registration in Medicine, something would have been done; but it was not reported.

I say that a young man, if he is going to specialize on eye, ear or throat, should have special training, and he should not attempt major operations on a human being until he has had proper preparation, anatomically and surgically, and I believe that a proper apprenticeship is what Doctor Mayo referred to when he said, "Commencement Day" means just that, for after graduating, the young surgeon begins a special course of surgical training." I think that if a man is going to do the specialties that it is necessary for him to study under masters, and I believe that he should not do major surgery until he has done post-graduate study for three years and perhaps more, and that he should not be given heavy major operations to do when he is still a medical student.

I repeat that internes should not have the mantle of protection thrown over them in doing major operations which they are not competent to do. They should wait until they are anatomically and surgically prepared, and also, after proper teaching. Let them do operations on dogs and cats, but not on human beings. We are looking for proper publicity in these matters for the protection of the public. I have a clipping here from a labor union paper of Massachusetts. After certain introductory remarks about the man who made the statement concerning the question of legalized murder, this paper says:

The remark was to the effect that "young men just out of college are professionally unfit to perform difficult operations, and that by permitting inexperienced surgeons to perform such operations, the State practically legalizes murder."

"This is a bold but most important statement, and it will make possible not only more rigid examinations, but the acquirement of more preliminary experience before a graduate is permitted to hang out his shingle." Now, the man who wrote this for this labor union paper, whoever he is, interpreted what I mean. He goes on to say, "A human life should not be the subject of an experiment for inexperienced and inefficient doctors, and, as Dr. Fallon says, our present system may make them such." That is the answer to that.

Some Practical Hospital Problems Encountered in an Industrial Community.

By E. MacD. Stanton, M.D., Schenectady, N. Y.

The hospital problems encountered in Schenectady are not different in kind from those of most other industrial communities of similar size. The means which we have adopted for solving these problems are by no means out of the ordinary. However, our problems have in them certain elements of special interest because in Schenectady several of the fundamental factors governing these problems are encountered in almost elementary simplicity. There are no complicating factors to cloud the situation. Therefore, it may prove of some interest to you for me to describe briefly our problems and how we have attempted to solve them and to indicate what I believe has been the effect not only upon the hospital but on the community as a whole and particularly upon the local medical profession.

We have all of us heard, I am sure, the oft repeated statement that modern scientific medical treatment entails an expensiveness far beyond the reach of the average man. We are told that the poor can receive hospital care as a charity, the rich may obtain it at exorbitant rates in their private rooms, but that, in many localities at least, provisions are quite inadequate for the self-respecting middle-class in moderate or meagre circumstances.

Our hospital problem in Schenectady is somewhat unique in that local conditions are such that practically our entire effort must be directed toward furnishing modern scientific medical, surgical and hospital care to people of the average financial status of wage earners and, furthermore, the financial resources of the community are such that these services must be paid for by these same wage earners and others of relatively similar financial resources. Most communities of the size of Schenectady contain a fair proportion of really wealthy peopeople, but with us wealth of the class which is usually called upon to support and endow hospitals is almost non-existant: The capital of our great industries is for the most part owned out of town and the philanthropists which it produces may support the hospitals of the cities in which they live but they do not support those of Schenectady. The poor we do have with us in average numbers. The vast majority of our populations is, however, composed of the families of wage-earners and of salaried men and of tradespeople.

The influence of tradition is everywhere powerful and especially so in hospital work. Our hospital was started on the traditional concept of support by contributions and the idea that its chief function would be to do the largest possible amount of charity work. Little progress was made along these lines because these two concepts represented only the top and bottom fringes of the real problem as it exists in our community, which is the problem of furnishing adequate medical, surgical and hospital facilities to the middle class—90% or 95% of our population.

Through legacies, the donations of a few generous individuals and "campaigns," we have been able to raise the funds necessary for our buildings and equipment. By careful management and by the apportionment of charges according to the ability of our patients to pay we have found it possible to make the hospital almost self-supporting as far as the general running expenses are concerned.

Of course, economy of management has been absolutely necessary, but this has not meant that we have had to forego necessary equipment, or give sub-standard service as regards nursing, food or supplies.

In order to get maximum economy in running expenses it has been absolutely necessary to have the full coöperation of the attending physicians and surgeons. It is the easiest thing in the world for one surgeon to use twice or even three times the amount of dressings and surgical supplies that another surgeon will use on the same class of cases with no difference whatever in results. To a lesser extent, the same necessity for the economic coöperation on the part of attending men holds true in regard to diets and medicines.

The question of obtaining a maximum total gross income from the patients treated has been very largely a problem of keeping the charge for the pay ward and semi-private services down to a point where the patients themselves can pay in large part at least for the services rendered. The deficits arising from these services have been largely made up by charging slightly more than cost for the private room patients, but here, too, the charges must be kept well within the ability of those charged to pay.

The problem of the charity work of the hospital has been solved through the working of a number of interrelated forces. First among which I would place the general education of the public to the point of realizing that hospital charity is not the normal thing in the community and that while the hospital is always willing to meet the deserving sick part way, on the other hand the hospital and the community expects each family to meet its own obligations as far as possible. One of the chief factors in doing away with unnecessary hospital charity was the placing of the charity work of our city in the hands of the municipality rather than in the hands of private charity organizations. Formerly much of the charity work was undertaken by private charity organizations with the unavoidable consequence that these organizations were competing among themselves as to the amount of charity work which they did. The sending of charity patients to the hospital was always one of their favorite occupations, even though the organizations did not themselves contribute to the support of the hospital. Incidentally they spread throughout the entire community the belief that charity at the hospital and medical charity in general was the normal thing to expect.

Placing the charity work of the community on a municipal basis has had several effects which were not at first anticipated. First, it has done away with the competition between the different private organizations. Second, it has placed the costs of charity squarely up to the community. If wages and other conditions are such that a large amount of charity is necessary it is a community problem which must be paid for by the community. As a result the community sees to it that conditions are corrected. In other words, to a municipality the poor are a liability, whereas to private charity organizations they are liable to be assets.

In Schenectady all requests for hospital charity are referred to the city department of charities. This department has always been under most capable management and its motto has been to help the poor help themselves. The department pays ward rates for all cases treated in the hospital. The department maintains as its policy the idea that every sick patient shall have the care which is best calculated to place that patient or family on an independent basis as soon as possible. No deserving cases are neglected, but as a matter of fact under the workings of this plan the charity work of the hospital has been reduced from an average of about 55% before the plan went into effect to less than 15% in 1919. Viewed as a community problem, the necessity for any considerable amount of medical charity indicates some fundamental social defect in that community. The real remedy can never be that of granting more charity. It is far better to search out and eliminate the causes which underly the excessive demand.

The medical profession is ever ready to do its share to help along the work of the dispensary and the ward, but society in general and the community in particular should always be impressed with the great truth that one of the most difficult things to accomplish in this world is to actually get something for nothing. This rule holds just as true in regard to medical charity as in anything else. One of the reasons why the fees of consultants are liable to be beyond the reach of the average man is the fact that these same consultants are compelled by their hospitals to give a large part of their time free. When a hospital requires its attending men to give say one half of their energies to charity work, a perfectly natural consequence is that the pay patients of these consultants will be compelled to pay at least twice normal fees for their services. Of course it is a good policy to compel the rich to pay for the services rendered the poor, but the medical profession should never lose sight of the fact that this policy carried a little too far is liable to lead to really serious social difficulties, not the least of which is the fact that the fees for pay cases must of necessity be raised to a point beyond the reach of the average family. This again increases the demand for free service and establishes what is in reality a vicious circle.

We have recently had under consideration a plan of hospital financing which embraces the insurance principle and which bids fair to assume real importance in our community. Several months ago a committee of the public school teachers' association came to the managers of the hospital with a request that they be allowed to furnish a room and also furnish a small sum each year toward its support. Investigation promptly brought out the fact that this donation had several strings attached to it and that the Teachers' Association would expect the hospital to render a considerable amount of service to the teachers free of charge. It occurred to one of us that the situation contained in it factors which might lend themselves readily to insurance methods of adjustment. The teachers in Schenectady, as elsewhere, are as a group rather poorly paid. Many of them are living in boarding houses where care is not easily obtained during illness. Also as a group they are inclined to have certain standards of pride which make it difficult for them to accept the cheaper ward and semi-private accommodations in the hospital. As an insurance proposition, however, they represent a fairly uniform risk group and actuarial calculations based on their sickness records for the past several years shows that if the Teachers' Association will collect one dollar per year from each teacher member and turn this sum over to the hospital, that in return the hospital can afford to allow any teacher requiring hospital care during the year a credit of eleven dollars per week on her hospital bill. This plan will make it possible for an insured teacher to be sick indefinitely in a two-bed room at a cost of $6.50 per week for her hospital care. The difference between $6.50 and $17.50 will make all the difference between a fairly easy burden and a real hardship to the sick teacher.

In many respects this plan is ideal from an insurance viewpoint. The common run of minor illnesses are automatically eliminated. The more severe illnesses requiring hospital care occur with sufficient infrequency to make them insurable risks. At the same time the plan of limiting the hospital benefit to a point well below its cost to the insured individual will automatically take care of any tendency to loss because of malingering. The actuarial data show that the hospital has received a sufficient margin of safety to warrant the expectation that the plan will be of real financial benefit to the hospital.

The teachers have unanimously accepted the plan. I am fully confident that if it proves a success with the teachers that ultimately it will spread to other groups such as the stenographers of our large works and possibly the labor unions and similar groups throughout the community.

In Schenectady, as elsewhere, the problem of so-called health insurance has been a very live one for several years. We are unanimously of the opinion that the attempt to cover the ordinary run of short-duration illnesses by the insurance method is bound to result in failure, or if forced by the mandate of the law, in extreme hardships to the medical profession. However, we do not feel that the insurance principle as applied to the financing of the sickness problem is altogether bad. From both the social and actuarial viewpoints, the financial problem of the hard-hitting, long-duration diseases is one which should lend itself readily to solution by the insurance method. I cannot help but feel that the correct solution of this problem can come only when we realize that there is an uninsurable portion of the sickness problem and also an insurable portion. The laws so far proposed have been unfortunate in that they have specialized in the uninsurable portion of the problem and have almost entirely neglected the long duration illnesses which of themselves constitute the portion of the sickness problem which most readily lends itself to solution by the insurance method.

The question has undoubtedly occurred to some of you as to the support we receive from the great industrial corporations doing business in Schenectady. Donations for capital account such as buildings and improvements to plant have been given freely and have helped the hospital to their face value. However, as regards donations to cover running expenses, our experience has not been altogether satisfactory and I am sure that in this regard others must have encountered similar difficulties. Donations given by corporations are liable to have strings attached to them. I am firmly of the opinion that our experience would lead us to believe that the best way to collect funds from a manufacturing corporation for the support of a hospital is to see to it that the corporation pays for full value received for each of its patients treated in the hospital. This is nothing more nor less than a good fair business proposition which is not liable to have any strings or paternalistic schemes attached to it and it is the plan which will probably net the hospital the greatest income in the long run.

I have spent some time in describing the financial aspects of the hospital situation as it exists in Schenectady. There are three parties definitely effected by this situation—the hospital, the public and the medical profession.

To many accustomed to work in hospitals supported by large endowments and generous contributions it might seem that we must be compelled to work under a serious handicap. Formerly I was decidedly of this opinion but gradually I have been forced to come to the opinion that the situation as a whole should be viewed as an asset rather than a liability. We are able to purchase all really necessary equipment and supplies. It costs very little to keep accurate histories and records and it costs nothing at all to make use of these histories at our monthly clinical meetings. Our laboratory service is in every way adequate. It serves not only the hospital but the community, regardless of whether or not the patient may be an inmate of the hospital. This laboratory and the work done in the laboratory has recently been taken as a standard by the New York State Department of Health, which department is making a state-wide campaign to induce other hospitals to introduce similar laboratory facilities. Our x-ray department is well equipped and fully adequate to the needs of the hospital. In short I know of no work done in the hospital which is done poorly because of any excessive expense associated with modern scientific medicine.

As regards the community in general it may seem a little hard at times for some families to pay their hospital expenses, but the mere presence of these necessities has a definite effect upon the attitude of the public in regard to wage adjustments. Public sentiment is insistent that the general wage level in the community shall be such as to enable the wage-earning families to meet their ordinary obligations, including the costs of ordinary medical services. I have myself very little doubt but that a generously endowed hospital and the introduction of a considerable charity medical service would ultimately be reflected in a corresponding lowering of the general wage scale of the community. As regards the interests of the medical profession, I believe that our position is a peculiarly favorable one as compared with the situation that very frequently develops in the sphere of the heavily endowed hospital. Our hospital is an absolutely open one and it is an open hospital for the very simple reason that patients who pay for their care in the hospital demand that they be allowed to select their own physician or surgeon. In our hospital we do have a staff, appointed with all the formalities of staff appointments in any other hospital, but as a matter of fact the duties and actual service of this staff are merely nominal. The real staff of the hospital consists of the members of the County Medical Society, and the County Medical Society is actually represented on the board by three members elected by the society and known as the medical advisory committee. It is the duty of this committee to adjust all questions arising between the medical profession and the Board of Managers of the hospital. The committee is responsible to the County Medical Society and it is worthy of note that during the twelve years that this plan has been in operation all differences between the managers of the hospital and the medical profession have been readily adjusted to the entire satisfaction of the medical profession.

To those accustomed to closed hospitals and all the staff privileges and restrictions usually encountered in these hospitals, the idea of a wide-open hospital with the 110 members of the County Medical Society practically functioning as a staff, a picture of chaos and complications may come to mind. Undoubtedly there are some complications inherent in this arrangement, but as a matter of fact a study of our records shows that the loss of hospital efficiency due to these shortcomings is surprisingly small and I believe entirely overshadowed by the stimulating effect of the open hospital upon the general average of medical practice in the community.

DISCUSSION.

Dr. C. E. Mongan, Somerville: I wish to thank the chairman of this section for asking me to come here today and discuss this question, which I feel I am not fully equipped to do. If you will bear with me, I will do the best I can. I regret that Dr. Stanton has been summoned back to Schenectady by a serious railroad accident so that he is not here to explain some of the details he has mentioned in his paper. Like all medical questions, this question also is a complicated one. It does not concern hospitals alone, but concerns the whole medical practice. Your chairman, in opening, stated that we are now standing on the threshold and must decide whether or not we would start and right our own house or stand aside and have someone right it for us. I will go a little further than that. You cannot stand aside and let things take their course, but you must right them yourself. The practice of medicine no longer is the same as in the old days, when the physician remained in his office, named his diagnosis and prescribed for the patients, and when he visited the houses of his patients to attend them. Now-a-days the medical profession has other functions. There are social and economical aspects to the practice of medicine, as well as medical and surgical. There are other things which we as practitioners of medicine must consider. In this paper of Dr. Stanton's he shows us a typical American community, and he deals with this question in a typically American way. He does not go across the water to solve the question of medical and surgical practice in the United States. The condition of that community is typical of a great many other communities. The first point in Dr. Stanton's paper was the question of charity, and they seem to have worked it out very well in Schenectady by putting charity where it belongs. One great difficulty we have in smaller communities is that the community feels it owns the hospital if the hospital is a semi-public one because it has contributed something to its support, and that it can send all patients to it at all times, never thinking of who is going to pay the bill. There in Schenectady they have settled that question by putting charity where it belongs.

There is one other point of which Dr. Stanton did not speak in his paper, but which is coming up every day in our community, and that is, the voluntary societies who wish to take over in part the practice of medicine. In the past they have done very good charitable work, and having done good charitable work, they think they can do something to help on the practice of medicine. In my city they have started what they call clinics. These clinics take place in a schoolhouse or other place, where the people come to be examined and to have their children looked over. My contention is that a clinic belongs in a hospital, under the charge of a physician, where the case may be diagnosed and treatment given when indicated. It is not for any society to tell physicians how to take care of the community, and if they succeed in doing this, it is the fault of the community that they have surrendered their rights. I shall oppose personally any attempt to take away any of the functions of the medical profession, and it is a function of the profession to take care of the ill.

The speaker this morning in the Annual Discourse laid very careful stress upon the insurance part of the practice of medicine, and he laid great stress upon compensation and upon industrial medicine as it is practised in the United States. He came to the conclusion, and I agree with him, that the industrial work in the big factories is done not wholly on account of the humane benefit, but because it works to the advantage of the organization which employs doctors to take care of the sick and the injured. In a recent publication, Dr. Mock states, "It is figured that through one branch of medical work alone, after the entire medical cost was deducted, there accrued to the employer an annual profit of over a quarter of a million dollars through the examination of 118,000 patients." That is to say, after the industrial medical men had taken care of all these people, there accrued in one year to the industrial organization employing him a saving of

$250,000. That is a phase of industrial work that has probably never occurred to many in this room. Now it is not well perhaps for us to get down to the sordid or financial side of this question, but in discussing these questions in all their bearings it is just as well to keep in mind what Dr. Hugh Cabot said about the "human side of the thing." The bringing back to work as quickly as possible of sick or injured persons and the saving of the overhead expenses is the real reason for industrial work in factories today.

In another part of this paper, Dr. Stanton brought up a new idea, and that is whether you should have an open or a closed hospital. Heretofore I had been in favor of a closed hospital, especially in small communities. After hearing this paper; I don't know that I am so strongly in favor of a closed hospital. There surely is something to be said in favor of the open hospital. The law recognizes fundamentally the open hospital, when it says that the person who is injured under compensation law may choose his own physician. To my mind, that recognizes fundamentally an open hospital. Now I don't know, and I cannot say how an open hospital could exist in a large community like Boston, or in some of the larger cities in Massachusetts, but I do think that in a small community the open hospital plan could be worked out to great advantage, and then, if successful, the plan could be taken to the larger cities. The objection to the open hospital has frequently been that there might be five or six physicians coming in in the morning to make their visits,—that they might all come at one time, and the number of nurses would not be sufficient to attend each physician, or that one physician might come at nine o'clock and three or four at intervals during the morning and there would be no regular time for physicians' visits, and this condition would incur great expense and, some maintain, would not be workable. I think that could all be changed. I think the institution of the open hospital in the small community is something which would be appreciated and is something along constructive lines which has not been done before. As I said in opening, we must remember that we are no longer practicing medicine purely. We are concerned with the affairs of the state. We have come to a new era and we are going on in a new way, and it is up to the men here to give to the community something constructive.

I would like to tell you more of my experiences before legislative committees and commissions when from time to time I and others have appeared before them in connection with medical legislation. They always want to know what we have done for the community. Of course, our one reply has been that we have done so much in preventive medicine. The average legislator does not understand or comprehend what you mean by preventive medicine. He wants to know what you can do for the citizen when sickness comes upon him suddenly and when the citizen is unprepared financially to cope with sickness, and it is now time for us to present some definite constructive program that will not only suit the public, take good care of the sick, preserve the rights of the medical profession, and get rid of the objections and criticisms which are coming more frequently of late from half-baked philosophers with half-baked ideas.

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How Can the Shortage of Nurses be Met?

By Joseph B. Howland, M.D., Boston.

Florence Nightingale, the founder of modern nursing, was born 100 years ago, and this year, when the centennial of her birth is being celebrated, we hear from all parts of the country that fewer women than formerly are entering the profession she did so much for.

We also learn that in some states there is a shortage of nurses for private nursing. During the war it was to be expected that fewer graduate nurses would be available for any other than war service but we should probably not have thought much about it if it had not been for the influenza epidemic. This past winter the same conditions prevailed for a short time. In Boston, at least, during the early winter and this spring, the registries have been able to supply the demand for nurses for private nursing. It is true that not to the same extent as formerly can the better educated and better trained nurses be obtained for private work, and this has caused much unfavorable comment by physicians.

We know that hospitals all over the country during the war took in many more than their normal number of pupils in an endeavor to meet the country's needs and it is fair to suppose that in doing so they drew on the supply of women who have entered later.

To just what extent this affects the present situation we can only guess, but it must be taken into account. That there are other important causes, all training school principals agree, and it is well known that the shortage of pupils was showing itself before the war.

Perhaps a brief review of the progress of nursing in this country may throw some light on the present situation. The first training school for nurses in the United States was established at the New England Hospital for Women and Children in Boston in 1872, and in the following year training schools were opened in Bellevue Hospital, New York, at the New Haven Hospital, and at the Massachusetts General Hospital. Although at the beginning the hospital authorities were not without misgivings as to the success of the new venture, it did not take trustees, physicians, and the public long to see that a new profession of inestimable benefit had made its beginning in America. The trained nurse gradually replaced the untrained attendant who usually had little education, not much ambition to learn and who occasionally approximated in many respects the celebrated Sairy Gamp.

As trained nursing became better known, large numbers of well-educated women, who desired to be independent, entered training schools, as there are few other desirable fields in which they could earn their own living. Until nurse training became popular, unless they married or took up school teaching or music teaching, they continued to live at home. After completing a course of training a few became superintendents of training schools; the great majority, however, if they practised their profession must do institutional work or private nursing. The broad field in which nurses may work today had not been dreamed of. A most important step in the progress of nursing dates from 1893, at the time of the World's Fair in Chicago. At this time, at a meeting of the Hospital and Medical Congress, it was suggested that a sub-section of nursing be formed. This was done and Miss Isabel Hampton, Superintendent of Nurses of Johns Hopkins Hospital, was made chairman. As a result of this meeting a few days later a small group of training school superintendents, women who realized the incompleteness of their own training and who wished their pupils to benefit by their experience, met again and founded an association of training school superintendents which later became the National League of Nursing Education, an association which has done much for the advancement of nursing. Miss Sophia Palmer and Miss M. E. P. Davis, both graduates of the Massachusetts General Hospital Training School, were conspicuous members of this first gathering. Miss Palmer continued actively in educational work until her death this past winter.

About 20 years ago other opportunities than nursing began to attract educated women, such as library and secretarial work. During the past decade, social service, domestic science, medical gymnastics, and occupational therapy, have been added to the list. More recently many well-educated women may be found in commerce, holding important places in stores as teachers of salesmanship, window-dressers, decorators, and as store-guides.

Not a great many years ago when a young woman wished to become a nurse she wrote to a hospital applying for admission to the training school, and if accepted, saw for the first time on the day of her admission, the hospital that was to become her home for two or three years and which was to give her training for her career. It is not so today; candidates make long journeys to look over the hospitals they are considering and before they decide ask many searching questions in an endeavor to find out the strong and weak points of the rival schools they are to choose from. A great many hospitals conducting training schools still have too few paid instructors, too long hours, too much domestic work, unsuitable living quarters, and too little in amount of variety of clinical material to attract the kind of women we want to become nurses. Today we find some physicians advocating a return of the old standards of 20 years ago, as if such a backward step would again attract the same sort of women who then entered training. They do not seem to realize that conditions have changed. It is the school with the standards of 20 years ago that is crying loudest today for pupils, and as a rule only the more progressive schools have full classes. It must be admitted that not all schools are so fortunate, but in the main this is so. It is certain that the training school of the future will be less dependent on the hospital for its support.

Many hospitals have from their beginning had difficulty in raising money enough for their charitable work and their training schools have shared in this lack of funds. Some, in fact, have done so little that it is surprising that they have been able, year after year, to obtain students.

There is today a distinct tendency to separate more widely the theoretical work from the practical training in the hospital as evidenced by the so-called University Training Schools. Upon her return to England from the Crimean War, Florence Nightingale was given fifty thousand pounds by the grateful people of England. She accepted it only with the understanding that it was to be used to found a school of nursing which might train women along the lines she advocated. The Nightingale School of Nursing which she established in connection with St. Thomas' Hospital in London, was the first endowed training school for nurses, and after all these years since its beginning, I know of no other on such a completely independent educational basis.

An important conference took place in New York last February at the instance of the Rockefeller Foundation. There were present educators, hospital trustees, superintendents of hospitals and training schools from all over the United States and Canada to consider the present nurse training situation, and its future. We may look forward with interest to the report of the committee appointed to study the subject. It seems to me safe to predict that there will be plenty of nurses for the important work they have to do when the public are fully awake to the necessary steps to make training again as comparatively attractive as it was some years ago.

We, as physicians, would do well to second the efforts of training school superintendents in their endeavor to make hospital trustees and superintendents see that their training schools have really educational courses; that casual, poorly prepared lectures by members of the staff are not an equivalent of well planned courses by paid instructors; that the large amount of domestic work, so often expected of nurses, is not educational, deprives her of time needed to properly care for her patients and may well make her question the wisdom of the choice of her calling.

Managers of special hospitals, such as surgical, obstetrical, mental, eye and ear, and children's hospitals should appreciate the fact that they cannot properly maintain training schools without ample affiliations to give their pupils the necessary all round training.

The field of public health nursing is expanding so rapidly that it seems almost impossible to meet the demand from this quarter altho many of our best nurses are taking up the work. A public health nurse may be a school nurse, an industrial nurse, a district nurse, an infant welfare nurse, and in small communities she may be a combination of these. They all have certain things in common, namely, that their hours of work are regular and well defined and may permit a woman in her off duty hours to live at home in an entirely different atmosphere from that of her labors, a fact of no small importance. Then again as a rule the importance of her work is appreciated by those whom she serves; she is looked up to as a friend, adviser, and educator.

It is increasingly difficult to get desirable graduates to return to hospitals as head nurses, a fact to be deplored, for we need the best of them as practical instructors to the pupils in training. It is probable that the long hours and the inability to live independent home lives have much to do with it. These conditions can be remedied as there seems to me no reason why most head nurses could not live outside of the hospital. Those few who for good reason must be on call should be provided with ample well-furnished living rooms.

More and more, hospitals are caring for the wealthy as well as the poor and although the well-to-do find it more difficult in some localities to get hospital accommodations, there is a growing tendency to provide for their needs.

It does not seem to me likely that our better trained nurses will again be available to the same extent as formerly for private duty for chronic cases and minor illnesses, and who can blame them? The necessary care for these cases can be given by trained attendants. Then, also, there is not the same helplessness in the home as formerly when sickness occurs, thanks to Red Cross Home Nursing courses. Hourly nursing will help to supplement the work mothers thus trained can do.

If attendants are to be trained to help with private nursing and work in special hospitals their status should be clearly defined. At present they not infrequently pass themselves off as trained nurses; if this is allowed to continue it will tend to discourage women from taking three-year training courses. This state of affairs should be remedied if compulsory registration laws were generally enacted establishing clearly the two kinds of service so that the public would know exactly what to ask for and what to expect when applying to registries for nurses and attendants.

The prospect of having enough nurses for our future needs does not seem to me discouraging. It merely means that we must adjust ourselves to changing conditions and not try to retard progress. Women are naturally attracted to nursing, but because there are so many other fields for them to choose from will not select this profession unless they have as good a prospect to live as happily in it as in other work.

It seems to me that we, as physicians, have a particular responsibility in the matter. We know the kind of women we need as nurses and we can do much to make this clear to the public generally.

If, as seems to me, we badly need large numbers of well educated women in the nursing field we can do much to help get them, not by criticizing those we have but by helping them to place our schools on a better educational basis. This we can do by showing the public, who are to be benefited by an adequate supply of nurses, that their part is to supply the necessary funds for the support of the training schools.

DISCUSSION.

Dr. F. A. Washburn, Boston: I can add very little to Dr. Howland's excellent and very complete paper. Perhaps I can emphasize a few points, however. I would like to say first of all that the country is now prosperous. Times are good. Dr. H. B. Howard used to bring out this point to me a good many times,—that when we have bad times, they were good times to run a hospital. In other words, you had plenty of candidates for your training school. In times of prosperity there are so many other avenues of employment open to women and every class of people who work in hospitals that the supply is limited. This matter of good times will rectify itself. Some say soon and some later, but hard times are sure to come, and when they do come, I for one look for a very marked increase in the number of applicants for our training schools. The question really divides itself into two parts. The first part is the scarcity of applicants for our training schools, and the second is the scarcity of women who go into private practice. That is, the small proportion of our graduate nurses who go into private practice. It is an undoubted fact that some hospitals have exploited nurses. Some of the small hospitals and some of the large ones have not given a *quid pro quo*. In other words, they have not given a complete training. They have secured their nursing at reduced rates, and have not given the equivalent in training. The nurses are awake to that, and as Dr. Howland pointed out, they look up the qualifications of a school pretty carefully before making a choice. Those hospitals are just trying to get something for nothing, and they must change their methods. If they cannot change to better methods, hire more competent instructors, and make a real school by utilizing their own hospital and by affiliation, they cannot give the proper equivalent to a nurse and they will have to get their nursing in some other way. What will that other way be? I can see only one thing for them to do aside from closing their doors, and that is to hire enough graduate nurses and to have a school for attendants. I don't mean by that that they should do their nursing of acute cases by attendants, but that they should go to the expense of hiring enough graduate nurses so that the nursing is done by competent women, and so that they can train attendants. Then let us have a compulsory registration law, which we absolutely need in this state. Thus they can train and produce women who will be of great use in the community.

The other side of the question, the second part, is, what can we do to increase the proportion of women who go into private nursing? As Dr. Howland pointed out, the opportunities for a trained nurse are very much greater today than they were a few years ago, infinitely greater than ten or fifteen years ago. The public health field has recently been opened, as you know. That has taken a large number of nurses from the private nursing field. The industrial nursing,—you know how many of our corporations have nurses on their payrolls,—the district nursing, and other lines of nursing are very much more attractive to an intelligent, educated woman because she is mistress of her own time, she can live in her own home, she has certain specified hours of work and she can live with her family. Now you must compete with that condition. It is here to stay, and how are you going to meet it? Taking care of the sick in the private home is the woman's natural function, and if the conditions are made as attractive as can be, trained nurses will consider them more favorably. In the first place, we can all do something to make a nurse's career attractive. How many of you men here would recommend your own daughters to be private nurses? If that question was asked you by your daughter would you back her up in doing it? If not, then let us put nursing where you will approve of it as a career for your daughter. Now that means the consideration of the nurse by the doctor. Usually she gets pretty good consideration from the doctor on the case. She does not always get it from the family, however, but the doctor can see to to it that she does get it from the family. Nine times out of ten what he says and the way he insists upon the woman being treated carries great weight and will settle the question. The private nurse will probably never in the future be in such large numbers that she can be at the beck and call of those with sufficient money to have her come on cases where her skill is not really needed. You do not need a trained nurse to care for a senile man or woman. An attendant can do that perfectly well. If you want some nursing supervision you can have your district nurse go in and supervise. You do not need a trained nurse for the various illnesses of infancy. In that way you will utilize the skill you have in the field to the best advantage. I think if we pay more attention to all these little points and many others, there will be an improvement in present conditions in the nursing situation.

Dr. W. P. Bowers, Clinton: The last paper and subsequent speaker have dwelt upon the importance of providing for the registration of attendants. It may interest the audience to know that a bill designed for that purpose was sent to the legislature last winter, but it was defeated by reason of the opposition of the State Department of Mental Diseases. The Board of Registration of Nurses had previously defined certain regulations which training schools for nurses must live up to. These requirements were opposed by the Department of Mental Diseases, so that if any other effort is to be made along these lines, it will be necessary for you to overcome that feeling of suspicion which causes opposition from the Department of Mental Diseases. At the present time the people who proposed these measures do not understand the reason for this opposition. So far as it can be determined, it will have no bad effect upon the activity of training schools for nurses in state institutions, but the fact remains that there is a very active, definite, organized opposition to the training of attendants by the State Department of Mental Diseases in Massachusetts.

Original Articles.

AN HISTORICAL NOTE ON THE RELATIONSHIP OF DIGESTIVE DISTURBANCES AND PSYCHOSES.[*]

By Charles Greene Cumston, M.D.,
Geneva, Switzerland,

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Throughout the history of the healing art observers—and not the least in reputation—refer to the frequent coincidence of neuropathic states with various digestive disturbances, and this remark does not apply to physicians alone, because Homer, Aristophanes and Democritus mention in their writings the influence exercised by the stomach over the cerebrum. Hippocrates clearly indicates the relation of mania to gastric irritation when he says: "Vomiting with restlessness, a low pitched voice and fixed gaze are the signs announcing the advent of mania," and he opines in the belief that gastric disturbances, likewise those of the intestine, often create hypochondria and insanity. "Those tormented by atrabile fall ill whenever the blood is surpassed by the bile and pituita; they then lose consciousness and become maniacs." Hippocrates' treatment of melancholia was by purging and travel—*navigare Anticyras.*

During the latter part of the first century A.D. and commencement of the second, Aretaeus of Cappadocia adopted the doctrine of morbid sympathy in its entirety. He regarded the stomach, or more correctly speaking *the cardia,* as "being expressly situated in the neighborhood of the heart, that it may give it proper tonus, spirits or weakness, from the influence that it possesses over the soul and this is its principal quality." Melancholia he believed to be engendered by "atrabile rescending of the cardia," and he goes on to say: "Melancholia does not suddenly disturb the intellectual faculties; the patients are mournful (sad), they are struck by consternation; the digestion becomes labored; they (the patients) are afflicted with flatulency, foetid eructations exhaling the odor of fish. Occasionally lurid paroxysms of fury succeed their sorrows. The distress of their mind is fixed and inherent to the same idea. . . . . . At a more advanced phase they complain of a thousand trifles and long for death. The habit of their body loses all human dignity; their skin imperceptibly assumes a dirty hue, with which a black and green tint is mingled. . . . . . They have ill smelling eructations. The arterial beats are small, miserable (in quality) and frequent." This is a classic description of the tachycardia met with in dyspeptic subjects. As to treatment, Aretaeus prescribes the same drug so lavishly prescribed by some today for the same clinical phenomena, namely, aloes: "*Benefacit et aloe, namque ipsa ad inferius intestinum bilem deducit.*"

Soranos (usually incorrectly written Soranus) of Ephesus, whose doctrines have been handed down to us in the writings of Caelius Aurelianus in about the year 190 A.D.,[*] and who lived in Rome at about the same epoch as did Aretaeus, namely, during the reign of Nero, has left us a very exact clinical description of melancholia. Diocles, who lived before Galen, regarded the stomach as the site of hypochondria.

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[*] Abstract of the opening lecture delivered to the winter course (1919-1920) at the University of Geneva.

[†] Rheinesius supposed that Caelius Aurelianus lived in the V Century, but there are no convincing proofs put forward to substantiate this supposition.

Cornelius Celsus, who wrote about the year 40 A.D., refers to a type of insanity characterized by sadness and which he advises being treated by diet of a light nature and purging with black hellebore. He occasionally resorted to the use of emetics and had the patient rubbed twice a day, this being a common practice of the day.

Galen (131-210 A.D.) describes the symptoms of hypochondria and refers to several individuals with gastric disturbances and marked involvement of the cerebral functions and he unqualifiedly places the starting point of the brain disorder in the stomach and lower abdomen. "*Ventris torpor omnium confusio. Oribus alius a ventriculo morbus, qui ab aliis melancholicus, ab aliis flatuosus nominatur.*"

Galen thought that the so-called hypochondriacal affections with flatulency were characterized by paroxysms of melancholy, and he therefore prescribed a succulent diet if the humor had not remained too long in the stomach and was easily eliminated; otherwise if the effects on the brain had been of some standing and if the affection progressed, he had recourse to violent purgative drugs. Upon one occasion, having the professional care of a young grammarian whose overtaxed mental powers inclined to convulsive seizures, he advised the use of all means that might set the digestive apparatus aright, while in the case of an epileptic child he successfully proscribed the ingestion of foods tending to produce flatulency as well as those which bring the blood to the head.

In his commentaries on Galen's writings, Vallesius expresses himself as follows: "By paying attention to the hypochondriac regions and belly, headache can be avoided," and Oreibasios, of Pergamos, in the fourth century, the compiler and commentator of Galen, follows the latter's doctrine and treatment of melancholia.

Aetios of Amida, in Mesopotamia, who lived at the latter part of the fifth and commencement of the sixth centuries, translated into Latin and commented the writings of Rhuphos, of Ephesus,[†] as did Oreibasios before him. The ideas of Aetios on the subject of melancholia are quite those of Hippocrates and Galen. He insists upon the cutaneous eruptions which indicate that the humors and juices of the body are corrupted; in his manner of thinking at the present time our clinical and laboratory men would say that the process is one of autointoxication pure and simple. Consequently, our confrère of Amida was ahead of Professor Bouchard by some fifteen hundred years, not forgetting the modern school of dermatology.

In the sixth century Alexandros of Tralles continued Galen's doctrines and described several types of melancholia. He looked upon migraine as a response of the brain to the gastric disturbances and gave preference to Armenian stone over the white hellebore recommended by Hippocrates as he considered that the former was a more powerful purgative although devoid of danger. Alexandros was not a partisan of drugs possessing violent action. It is interesting to note that white hellebore was returned to favor by Asklepiodotos about the commencement of the year 500 A.D., but it fell again into discredit.

Paulos, of Egina, in the seventh century, and Rhazes, in the eighth, merely commented upon the ancient ideas of Rhuphos, Hippocrates and Galen in respect to melancholia and attributed this morbid mental process to a thick humor similar to atrabile and which is contained in the inflamed stomach. In the twelfth century, Actuarius attributed a highly important part to animal spirits in relation to digestion and phenomena of the soul, thus supposing an evident connection between the two processes.

During the following centuries practically nothing is to be found regarding neuropathic states and gastric disorders. The Arabs were the servile copyists of Galen, likewise of Aristotle, so that several centuries elapse without giving rise to anything medical worthy of note, excepting the School of Salerno, where the writings of Hippocrates, Galen, Aetios, Oreibasios, and other ancient works were read and explained by the professors.

Then the fifteenth century came and the Renaissance, when a resurrection of science in general, and medicine in particular, took place, but unfortunately the influence of occult sciences soon became felt and the best minds of the times,—Paracelsus, Wier, Van Helmont,—were more or less given up to alchemy and endeavored to explain pathological phenomena by means of this obscure science.

At about the same epoch the illustrious Fernel, of Clermont in Beauvois, laid great stress upon the signs offered in humoral changes in his work which was the classic *par excellence* of the sixteenth century. He admitted that hypochondria resulted from hepatic and gastric morbid processes, and says: "*Vapor ater et obscurus obrepit in mentem . . . . laesa ventriculi concoctione.*"

[†] Usually styled Rufus of Ephesus.

According to Van Helmont (1577-1644) the Archaeus,—the supreme and immaterial power,—was seated in the stomach, for he writes: "*Spectatur nempe major authoritas stomachi in caput, quam capitis in stomacho. . . . . Unam in homine esse animam in stomacho tanquam lecto suo.* Drowsiness, delirium, insomnia, and many other symptoms that were supposed to be cerebral in origin are neither ameliorated nor cured by drugs having an action on the brain or by applications to the head, but rather by stomachic remedies.

The constant function of the stomach and the necessity for the entire organism that it should be perfect is for Paolo Zacchias (1584-1659) the reason why this viscus is the first to reveal any morbid condition arising in it, by such symptoms as flatulency, poor digestion, etc., and he also believed that hypochondriacal affections were principally located in the stomach. Zacutus Lusitanus (1575-1642) supposed that hypochondria was due to a coldness of the stomach, while the great Leyden clinician, Franciscus de le Boë or Silvius Deleboë, as he is also known (1614-1672), admitted that the gases and vitiated humors that are encountered in hypochondriacs act as poisons on the nervous system, and consequently the psychic functions become disturbed.

Daniel Sennert (1627) attributes a large part to the liver and stomach in the origin of melancholia, thus: "*Melancholia hypochondriaca appellatur, quod ex hypochondriis ortum habeat.* He also says: "In such cases a thick blood, similar to atrabile, is contained in the inflamed portion of the stomach from whence vapors ascend to the brain and pervert its functions." Stahl, in his work entitled *De vena portae, porta malorum, 1698,* naturally considers hypochondria as a consequence of some disturbance in the portal circulation, while G. Marccucius (1645) incriminated the stomach and liver when these organs were obstructed in their functions.

It would appear that the English anatomist, Highmore (1670), first discovered gastric dilatation, because he speaks of a relaxation of the fibers of the organ and he also states that in melancholic subjects there is a heavy slimy phlegm in the stomach which becomes acid and sour and engenders a too subtile blood. F. Hoffmann, of Halle (1660-1742), taught that hypochondria is the outcome of lack of tonus of the peristaltic movements of the stomach and intestines, and a contemporary physician of no mean repute, Schatcht by name, describes two types of melancholia, one nervous, the other atrabiliary in nature, which in modern medical parlance would simply be hepatic congestion, perhaps infection from the intestinal canal.

The great Boerhaave (1668-1738) attributed melancholia to a gluey, greasy matter obstructing the vessels of the hypochondrium, while Manget, of Geneva, a physician of no mean parts, regarded this mental process as due to an atrabiliary humor present in the spleen and pancreas. Lange gave a large place to ferments in the production of melancholia, but like his contemporary, Sydenham, and numerous other writers of the day, he appears to have confounded these mental processes with hysteria. The diet ordered for epileptics one hundred and fifty years ago by Tissot, of Lausanne, differs very little from that given today in cases of dyspepsia resulting from fermentative processes, and it is notable that he advises a milk diet, although Cheyne (1733) had done so before him. The latter observer believes that melancholia results from obstruction of various viscera, particularly the hepatic gland. Cullen (1712-1790) noted that all subjects with melancholia (hypochondria) are at the same time afflicted by some gastric disturbance and advised a very strict diet when a maniacal stage was being reached. Vieussens (1641-1720) and Bordeu (1722-1776), the latter to my mind one of the greatest clinicians of the eighteenth century, refer to the intimate relationship existing between the gastric symptoms complained of by hypochondriacal patients and in psychic manifestations of this mental process. The Scottish physician, Whytt (1714-1766), himself a decided neurasthenic and constipated subject, remarks that when the stomach and intestine contain gas or some other nefarious humor, they affect the brain to such an extent that the subject loses his mental faculties.

Many other writers could be quoted bearing upon the subject of this lecture, but I shall conclude by giving the opinion of some of the great alienists of the epoch, the most weighty of which is Esquirol (1772-1840) and his student, Bayle. The former believed that certain types of melancholia were due to a displacement of the transverse colon, while Bayle mentions certain cerebral disorders secondary to enteritis and gastroenteritis. Beau maintained that there was no idiopathic melancholia and the types which appeared to be the least symptomatic invariably resulted from some gastric disturbance. The great Chomel wrote: "*Quand je vois un malade en proie au délire je suis entraîné à en chercher la cause dans les organes éloignés, avant de la demander au cerveau,*" while according to Gall's teachings, curable cases of insanity are digestive in origin, the incurable cases having a cerebral origin.

That great master of mental pathology, Philippe Pinel, placed the primary seat of insanity in the stomach and intestines and supposed that the disturbances of the mind originated from these centers and that by a reflex action the liver provoked melancholia. The Germans of the epoch added nothing to the subject, their theories were vague and based upon the writings of the French school, so that the last observer whom I shall quote is Broussais (1772-1838), the distinguished professor of Montpellier, who remarks that moral factors do not produce insanity until they have first caused some gastric inflammatory process, "*Comme si l'encephale avait besoin, chez certains sujets, de la réaction des viscères pour arriver à un haut dégré d'irritation.*" It is therefore evident that Broussais regarded melancholia as the consequence of a gastroenteritis reacting on a predisposed brain. And finally we come to Beard, of New York, who first described neurasthenia and recognized cerebral, spinal, sexual, and gastric exhaustion as its etiological factors, and from his time (1880) on the names of those who have added to the knowledge of the relationship of gastric and intestinal affections to the psychoses is legion.

THE EARLY ORTHOPEDIC TREATMENT OF INFANTILE PARALYSIS.

By Arthur T. Legg, M.D., Boston.

Infantile Paralysis, with its high mortality and terrible deformities, is again engaging the public attention on account of the present outbreak in Massachusetts. As a natural sequence many questions as to orthopedic treatment and its probable results are addressed to the medical profession.

It, therefore, seems a fitting time to describe the methods of treatment which have been found successful in caring for the victims of the 1916 epidemic and to emphasize the principles brought out by a careful study of the progress of more than one thousand cases.

It has been my privilege, since November, 1916, to conduct the clinics in the after treatment of infantile paralysis held by the Harvard Infantile Paralysis Commission, and I shall try to describe our methods of examination and treatment as representing what we have found to produce the best final results for these unfortunates.

According to many, orthopedic treatment should begin at the end of the tenderness or the sensitive stage. In my opinion it should begin as soon as the acute cerebral and febrile symptoms have subsided, for even at this stage the unequal recovery of opposing groups of muscles may cause a contracture of the stronger group; and markedly sensitive cases may need to be protected by plaster or splints.

No active therapeutic measure should be started until the sensitive stage has entirely subsided; but during this stage protective treatment, as a bi-valved plaster cast or light wire splints, applied to a sensitive joint in the normal position is advisable to insure perfect rest and prevent beginning deformity.

It has been our custom during this stage to give the patient hot saline baths. These seem to be very efficacious in the treatment of the sensitiveness.

This stage of sensitiveness varies considerably, but may last from a few days to a few months. Some cases show no sensitiveness whatever, while others are extremely sensitive. Any massage or manipulation, while it is sensitive prolongs it.

The question as to when we shall allow these cases to sit up arises early in the treatment. It is the desire of all parents to get the child up as soon as possible, and they will prop it up in a chair, before there is a sign of recovery unless they are warned of the dangers of this procedure. This is one of the greatest causative factors in deformity. The foot, hanging in the equinus position, favors a contraction of the gastrocnemius; the flexed position of the knees favors contraction of the hamstrings, and the flexion of the thighs at the hip, favors the flexion deformity where there is weakness of the hip extensors. The sitting position also favors deformity of the spine of there is weakness of the trunk muscles.

It is not my contention that patients should be kept in the recumbent position indefinitely, but I believe that they should be kept recumbent for two or three months at least, whenever there is considerable involvement, only allowing them to sit up for very short periods for a change in position, and then only when they can be constantly watched for any evidence of deformity.

Again, if allowed, the parents will encourage walking, even if the child is barely able to stand, honestly believing that this will aid in the return of power, and, before the experience of the recent epidemics, we all believed the same. In allowing this the already weakened muscles are given the body weight to support and become stretched, causing deformity, and from overwork become weaker than they were before. Walking, therefore, should not be allowed, unaided, until the muscles have regained power enough to perform their functions properly.

The problem of muscle fatigue is a very important one, and one of the hardest to prevent. We all know it is next to impossible to restrict the activities of a previously strenuous child, especially in a case where only slight impairment has occurred, but it is in just this type of case where unrestricted activity may do the greatest harm from stretching caused by fatigue. Given an only slightly weakened gastrocnemius, unrestricted walking will cause weakening from fatigue, followed by stretching, in practically all cases, and may result in an ultimate calcaneous deformity.

It will thus be seen that it is of the utmost importance to guard against fatigue from overuse, by making frequent examinations, and we have seen it proved while watching the cases of the 1916 epidemic, that it is the patients that have been most restricted in activity who show the greatest improvement.

Before beginning any scientific treatment a most careful and thorough examination of the muscles should be made. It is our method to go over the entire body, charting the relative strength as to whether they are normal, good, fair, poor, trace, or gone.

By "normal" is meant that the muscle can perform a normal strength test, as for example, a normal quadriceps can lift the body weight from the crouching position. By "good" we term a muscle that cannot come up to this normal test, but can overcome resistance. By "fair" we term a muscle that cannot overcome resistance, but can overcome gravity. By "poor" we term a muscle that cannot overcome gravity, but can perform its function by removing gravity. By "trace" we term a muscle that cannot perform any function, but may be felt to show some contraction, and by "gone," one in which no contraction can be felt.

These tests cannot, of course, be made on all muscle groups, and in infants the more accurate tests cannot be made at all. Here the child is placed in different positions, and the voluntary movements watched, or the different muscle groups are stimulated reflexly. Where the child is old enough to aid in the examination the actual strength of the muscle groups is taken by the spring balance test. These are also charted.

It may be seen that after an examination of this kind a very accurate knowledge of the musculature of the entire body is obtained, and that intelligent treatment may now be prescribed.

From these charts the exercises for the muscle training are laid out. Where it is possible the children are brought to the hospital two or three times a week to be given massage and muscle training by a skilled worker, and the mothers instructed in this, so the child may have treatment daily.

Since 1916, clinics have been held about the state and treatment prescribed. A field worker has been left in the district to visit the homes and instruct the mothers in the treatment. As is easily seen, this cannot be as satisfactory as where they can be brought to the hospital frequently.

Subsequent complete examinations are made every three months, and treatment changed, as the case demands.

The problems which we meet in the treatment of these cases are many. The first to arise is that of deformity, caused by contracture of one group when the opposing group is paralyzed or weakened. This, as I mentioned before, may start very early, and is especially true of equinus deformity where the child, with lower leg involvement, naturally lies in bed with toe drop, and the gastrocnemius recovering and contracting early, causes the permanent equinus deformity. The hamstrings usually recover before the quadriceps, which causes the flexed knee deformity. Both these deformities may be easily prevented by the application of plasters or, if seen early, by stretching. The flexion deformity of the hip is caused by allowing the child to sit up or crawl where there are good hip flexors with involvement of the hip extensors. This may be prevented by keeping the child prone, or by constant stretching at its beginning. Where permanent flexion is present the child stands with markedly increased lumbar lordosis. If the deformity is of long standing, operation is the only curative measure.

The paralytic scoliosis may be combatted where the case is seen early, by corset, or jacket. Probably the most difficult deformity to treat is that occurring at the shoulder from paralysis of the deltoid. Where the pectoralis major is not involved, its contraction will pull the head of the humerus forward, and the arm, hanging at the side, stretches the capsule, causing subluxation. For this we use the platform splint, which holds ,the head in the glenoid, with the arm in the horizontal position.

This brings us to the questions as to when we shall apply braces. Braces should be applied for only two reasons, (1) to prevent deformity, and (2) to allow locomotion.

To prevent a child from walking for an indefinite period of time is, of course, undesirable, and to allow him to walk in a deformed position is equally undesirable. Braces, therefore, have their place in cases where we know deformity will take place if walking is allowed without support, and long inactivity is undesirable; and in cases where there is extreme involvement of one or both legs and it is desirable to get the child about for the benefit of his general condition, and also to allow muscle groups not badly involved to get active exercise. It must always be remembered that braces favor muscular atrophy, and should be worn only when performing that function for which they are applied.

Our chief asset in bringing back to power those muscles paralyzed, and strengthening those weakened, is massage and muscle training; by massage we seek to stimulate the circulation in the muscle, and by muscle training to strengthen an involved muscle by making it perform its exact function.

Muscle training, if supervised by unskilled assistants, may do great harm, for a child will inevitably use the strong muscle in performing a movement, rather than the weak. Thus the strong muscle will increase in strength and the weak one will become weaker, with the consequent overbalance and deformity. Thus without a complete knowledge of functional anatomy an assistant is useless.

So in this muscle training the weaker muscles are made to perform their exact function. that they may gain rather than the stronger, so that the normal balance may be reëstablished. Massage and muscle training may cause fatigue and weakening, if overdone, as in over activity. Therefore, while muscle training is our best method for regaining power in weakened muscles, it must be supervised by a very skilled person.

Prognosis. Every parent will ask, during the convalescent stage, as to what will be the outcome. If we are honest we must admit that we can tell but very little. As to the outcome of muscles completely paralyzed we can say absolutely nothing. Where there is some power. we may say truthfully that there will be gain in power under skilled treatment. How much this will be it is impossible to say.

Summary. During the sensitive stage the patient should be at perfect rest.

No active treatment should be started until tenderness has entirely disappeared.

All beginning deformities should be corrected as soon as they appear.

An accurate muscle examination of the entire body should be made before starting any treatment.

Sitting and walking should be prohibited for two or three months at least, and then allowed only when the patient can be kept in a normal position.

Braces should be applied, (1) to prevent deformity; (2) to allow locomotion.

Fatigue must be constantly guarded against.

Massage and muscle training is our best method to reëstablish power.

New Instrument.

A FOUR-WAY STOP-COCK.

By G. T. Tyler, M.D., Greenville, S. C.

Some years ago I devised a four-way stopcock which, by connecting donor, recipient, and citrate solution with a syringe, might make direct transfusion easier to accomplish. Experiments made by Dr. E. H. Risley with this instrument were unsuccessful because of the necessary stasis of blood in the tube attached to the donor while the citrate was being added, or the blood was being injected into the recipient. Clotting resulted in this tube. While such efforts are now unnecessary, it has occurred to me that the cock might be of service in other clinical or physiological work: hence the description.

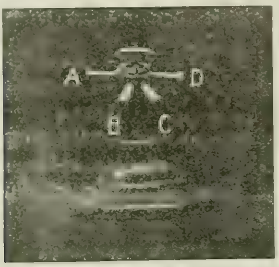

Fig. 1.—Stop-cock on detachable tripod.

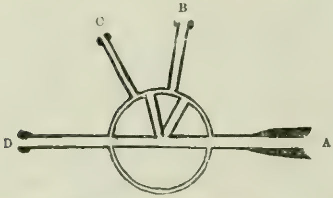

Fig. 2.—Diagram of stop-cock.

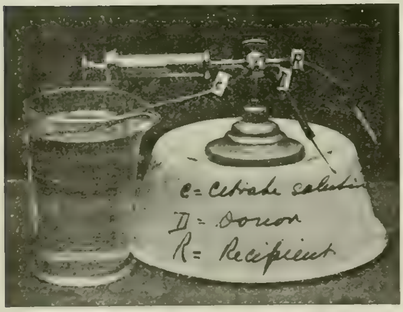

Fig. 3.—Apparatus complete with Bernheim cannulas. (To show manner in which it was originally intended to use the stop-cock.)

Illustration 1 shows the stop-cock held on a stand by a wire claw. Illustration 2 is a diagram of the instrument. The thumb-screw turns from D to B. In Illustration 1 the canals A and D are connected. Turn the screw to C: C and A are open. Turn it to B: B and A are open.

In the injection of more than one fluid, the flasks are connected with B, C and D. Any fluid can be injected at will by simply turning the thumb-screw. Or, from a flask or syringe attached to A, the same fluid can be injected almost simultaneously into three animals.

The larger rim at A, intended to attach a syringe, can easily be reduced if desired, to the size of the other openings. This, however, is not necessary for the ordinary rubber tube.

Book Review.

The American Red Cross in the Great War. By Henry P. Davison. New York: The Macmillan Company. 1920.

The account of the work of the American Red Cross in the Great War given in this volume by Mr. Davison, Chairman of the War Council of the American Red Cross, is one of the most interesting and comprehensive of the reviews of America's war work in different fields. This book describes the efforts and achievements of the Red Cross in the war from the first beginnings of its service in organization, conscription of funds, enlistment of personnel, and the gathering together of supplies, to the end of the war and the transfer of Red Cross interests to peace activities. From the work in this country in military service and in caring for the civilian needs of families of departed soldiers through the Home Service Section, the Red Cross extended its efforts to foreign countries, among our own men and among the people of France, Belgium, Russia, Rumania, Serbia, and Italy. The total revenues of the Red Cross National Headquarters and Chapters for the twenty months ending February 28, 1919, amounted to $400,178,000, and its total expenditures during that time were $272,676,000. Scarcely second in importance to the activities of the Red Cross during the war, and not less difficult, are the efforts which have been made through the League of the Red Cross Societies to solve some of the reconstruction problems which have arisen as a result of the war, and to formulate and develop plans for coördination and mutual support among the nations of the world in working for the betterment of public health and an improvement of social and economic conditions in times of peace. As the American Red Cross still lives and has before it duties and possibilities of human service as vital as those with which it dealt in time of war, this book should be of interest to all of the thirty million Americans who were enrolled as members of the organization at the end of the war.

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THE PASSING OF THE SEPTIC HAND.

When one considers the inestimable importance of the human hand in performing the work of the world, it is somewhat surprising how long an intensive study of its infections, and the correct operative treatment was delayed. It was not until the work of Kanavel in this country, that the subject received the serious attention which it deserved. Before this era, almost anybody was considered competent to treat and operate upon a bad septic hand, though a simple operation for acute appendicitis called for definite surgical skill; the fact being that a careful and well-planned operation to save the hand is much the more difficult.

It is a cause for congratulation that during the past few years the patient with a serious septic hand is rarely seen in the surgical outpatient clinics of our large hospitals.

There are two reasons for this fortunate fact. First, the general public are better educated to the importance of attention to septic troubles of the fingers, and minor cuts and scratches.

It is a common occurrence at the present time for people to seek relief for these troubles at the hand of the surgeon, as the patient says, "I was afraid I might have a badly infected finger or hand unless I had it fixed properly at first."

The other reason for the great lessening of these cases, is the improvement of operative procedures for the relief of the less serious septic conditions; careful thought and reasoning as to the best methods of treating the different types of infection, superficial sepsis, superficial felons, teno-synovitis, and the like.

It is indeed no small triumph that these unfortunate results of ill-advised treatment, which sometimes cripple the wage-earner most grievously, or render him a charge to his family are at present so comparatively rare.

WARNING AGAINST ORANGE BEVERAGES FOR MEDICINAL PURPOSES.

A recent issue of the *Public Health Reports* has called attention to the fact that in some instances mothers, by the labels and other advertisements, are feeding "fake" orange beverages to their children under the impression that they are giving them the orange juice recommended by their physicians. It has been stated by the Bureau of Chemistry that in most cases these beverages are nothing but sweetened carborated water, flavored with a little oil from the peel of the orange, and artificially colored; as a rule these preparations are of no medicinal value, because they do not contain the organic acids and the vitamines which are contained in real orange juice. Manufacturers of these spurious orange beverages often seek to deceive the purchaser by means of suggestive statements and pictures prominently displayed to attract instant attention, while, to escape prosecution for direct violation of the food and drugs act, they print other statements correcting the misleading features in inconspicuous places. It has been ruled by the Bureau of Chemistry, therefore, that the terms, "ade," "squash," "punch," "crush," and "smash," when used in conjunction with the name of a fruit, can be applied correctly only to beverages which contain the edible portion of the fruit or juice of the fruit named.

In order to prevent mothers from being misled by deceptive labels and advertisements, it has been suggested that physicians in recommending orange juice for children, warn the mothers against the substitutes of the beverages for the juice of real fruit.

MEDICAL NOTES.

American Association for the Advancement of Science.—At the recent Cardiff meeting of the British Association, the American Association for the Advancement of Science was represented by Dr. S. I. Franz, of George Washington University and the Government Hospital for the Insane. A resolution was passed by the General Committee to the effect that national associations for the advancement of science shall in future be invited to send representatives to meetings of the British Association.

Appointment of Dr. Charles E. Simon.—Dr. Charles E. Simon, professor of clinical pathology at the University of Maryland, has been appointed lecturer at the School of Hygiene and Public Health of the Johns Hopkins University. He has received an appointment also as managing editor of the *American Journal of Hygiene.*

Award of the Mary Kingsley Medal.—Announcement has been made of the award of the Mary Kingsley Medal to Professor G. B. Grassi, professor of comparative anatomy at the University of Rome, in recognition of his research work on the transmission of malaria by mosquitoes and the development of the hematozoa in the mosquito body.

Appeal for Funds to Control Typhus in Poland.—In two recent issues of *The British Medical Journal,* comment has been made upon the appeal made by Mr. Balfour, on behalf of the Council of the League of Nations, for £250,000 with which to combat typhus fever in Poland and Galicia. Mr. Balfour has called attention to the wide prevalence of the disease at the present time in Russia and Poland and has quoted authorities to the effect that unless adequate steps are taken at once the epidemic is likely to be far more lethal in the coming winter than in the winter of 1919-20. Mr. Balfour details the reasons which make the prevention of such a disaster a matter which concerns all nationalities. In the first place, economic conditions in Poland and Galicia cannot be stabilized while the population is threatened by typhus. Secondly, if the development of typhus be not checked it may well overrun Central Europe, where every circumstance is in its favor. As infection spreads it becomes harder to deal with, and no European country can count itself wholly safe if Poland be allowed to succumb. Lastly, there is the claim of humanity; Poland is the victim of circumstances for which she is not responsible. According to the statement of the Polish Minister of Health, there were, last year, 229,821 cases of typhus in Poland and Galicia, with 19,904 deaths. In contrast with the conditions obtaining in Russia, where the enforcement of preventive measures meets with great hostility from the inhabitants, the natives of Poland are anxious to coöperate in the extinction of typhus, and have organized a Polish Red Cross Society, as well as a number of special hospitals. The commission sent to Poland by the League of Red Cross Societies has received during this year gifts or funds from the Red Cross Societies of almost every European nation, and has done useful work in coördinating the most important of the relief agencies.

The British Medical Journal states further, that although the plan of operation is complete, the organization ready, and the methods to be employed are successful and well understood, the response to the appeal issued last May was met with scant success. The body commissioned by the League of Nations with the conduct of the typhus campaign on the Russo-Polish frontier is the League of Red Cross Societies, whose headquarters are at Geneva, and the organization accredited by the League for the purpose of enlisting voluntary help within the British Empire is the Imperial War Relief Fund (Fishmongers' Hall, E.C.4), which is under the patronage of His Majesty the King and in close touch with the overseas Governments. In Canada, Australia, and New Zealand the Governors-General have published their appeal on behalf of the Imperial War Relief Fund, and a vigorous campaign is in progress. In Australia, for instance, Sir Denison Miller, Governor of the Commonwealth Bank, is acting as treasurer of the Fund, and the appeal has been given prominence throughout the press. Effective measures have also been taken in the Crown Colonies and Dependencies. In the meantime, conditions conducive to the spread of the epidemic are reported from many areas in Central Europe. In certain districts in Prussia, for example, according to authentic information just to hand, these conditions are grave. In Breslau—to name one district only—of 22,544 adults who applied to an officially recognized relief agency, 10,300 had no body linen and 3,204 had but one chemise. Overcrowding by night and by day was rampant. Children in particular were suffering severely. Of 20,000 who applied, over 15,000 had no underclothing, more than 5,000 slept on rags, and 4,132 had no coverlet but their frocks. Eighty-six per cent. were undernourished, 41 per cent. were scrofulous, 48 per cent. tuberculous, and 72 per cent. suffered from bronchitis. Such conditions are, of course, highly favorable to the spread of epidemic, and it is for funds to remedy them, as well as to provide medical assistance and supplies, that the Imperial War Relief Fund exists.

Public Health Service Takes over Army Hospitals.—Two army hospitals, one in North Carolina and the other in New York Harbor, will be taken over by the United States Public Health Service during the present week.

The North Carolina hospital (O'Reilly Hospital), which is at Oteen, eight miles from Ashville, will be continued as a tuberculosis hospital with about 1,000 beds. Dr. W. M. Foster will be in temporary charge.

The location of the hospital is beautiful and the institution is admirably adapted to the treatment of tuberculous disease. The buildings were erected by the army for that particular purpose and are superior to most of those in base camps. Two of the wards will be remodeled; and some additional buildings will be erected for the use of the staff, especially the married staff, for whom no accommodations now exist.

The present patients will probably remain, if the hospital equipment can be taken over with them. The nurses, except those who wish to take accrued leave, will remain.

The hospital in New York, variously known as the Hoff General Hospital and the U. S. Debarkation Hospital, is at Fox Hills, about ten minutes' walk from the New York City ferry station at Stapleton, Staten Island. It will be continued as a general hospital with a capacity of about 500 beds. Dr. J. O. Cobb, recently in charge of all public health service activities in Chicago, will be in charge.

Leprosy on the Island of Rodrigues.—*The British Medical Journal* has published the following interesting review of the history of leprosy in Rodrigues, a solitary island in the Indian Ocean far to the east of Mauritius, reported through the Director of the Medical and Health Department of Mauritius:

The information gathered from the oldest inhabitants and by personal investigation leaves no doubt that leprosy was introduced into Rodrigues by a man known as "Diango," who came from Mauritius about forty or fifty years ago. This man evidently married a native of Rodrigues; he was employed as a fisherman by a family residing at Oyster Bay, a small coast settlement. Four or five years afterwards he developed leprosy. Owing to his condition he left Oyster Bay, and went to reside up the mountain about four miles away. A year or so after his departure one of the sons of his employer, who used to fish with him in the same boat, became affected with the disease, which afterwards gradually made its appearance in other families, all residents of Oyster Bay. It is believed that there are at present twenty-three cases of leprosy on the island; sixteen of the patients are descendants "direct or through marriage" of the first family affected with the disease, and at one time or another were residents of Oyster Bay. The other seven patients scattered over the island are descendants of "Diango."

BOSTON AND MASSACHUSETTS.

Massachusetts Elections to the American College of Surgeons.—The following Massachusetts physicians have been admitted to fellowship in the American College of Surgeons: Robert C. Cochrane, William P. Coues, George H. Earl, James J. Hepburn, Conrad Jacobson, Frank A. Pemberton and Louis E. Phaneuf, of Boston; Francis R. Burke, Daniel B. Reardon, Walter L. Sargent and George M. Sheahan, of Quincy; Marshall L. Alling and George A. Leahey, of Lowell; Frank A. Conlon and Fred D. McAllister, of Lawrence; Leon W. Jesserman, Framingham; George A. Moore, Brockton; William F. Lynch, Worcester; and Winford O. Wilder, Springfield.

Appointment of Dr. Charles E. Mackey.—Announcement has been made of the appointment of Dr. Charles E. Mackey as director of the health educational service in the City Health Department.

Hospital for Tuberculous Soldiers.—A new hospital being conducted at the Dutton estate in the Middlesex Fells in Malden by Dr. Charles E. Donlan, formerly chief of the Boston Infirmary hospitals at Long Island, will provide care for about one hundred tuberculous soldiers. Only men assigned by Government officials will be received at the hospital.

UNITED STATES CIVIL SERVICE EXAMINATION.

Anesthetist.

Receipt of Applications to Close December 7, 1920.

The United States Civil Service Commission announces an open competitive examination for anesthetist. A vacancy in Freedmen's Hospital, Washington, D. C., at $1,200 a year, plus increase granted by Congress of $20 a month, with board, and vacancies in positions requiring similar qualifications at this or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Freedmen's Hospital is a hospital for the treatment of colored patients.

Citizenship and Sex.—All citizens of the United States who meet the requirements, both men and women, may enter this examination; appointing officers, however, have the legal right to specify the sex desired in requesting certification of eligibles. For the present vacancy male eligibles are desired.

Subjects and Weights.—Competitors will not be required to report for examination at any place, but will be rated on the following subjects, which will have the relative weights indicated on a scale of 100: (1) Physical ability, 10; (2) Education and experience, 90.

Basis of Rating.—Under the second, competitors will be rated upon the sworn statements in their applications and upon corroborative evidence.

Education and Experience.—Applicants must have graduated from a reputable medical college and have served at least one year in a general hospital, and be experienced in administering anesthetics. If the appointee is not licensed to practice medicine in the District of Columbia, he may be required to secure such license.

Age.—Applicants must have reached their twenty-first birthday on the date of the examination.

Retirement.—Classified employees who have reached the retirement age and have served fifteen years are entitled to retirement with an annuity. The retirement age for railway mail clerks is 62 years, for mechanics and post-office clerks and carriers, 65 years; and for others, 70 years.

Photographs.—Applicants must submit with their applications their unmounted photographs, taken within two years, with their names written thereon. Proofs or group photographs will not be accepted. Photographs will not be returned to applicants.

Applications.—Applicants should at once apply for Form 1312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C., the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass., New York, N. Y., New Orleans, La., Honolulu, Hawaii, Post Office, Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul Minn., Seattle, Wash., San Francisco, Calif., Old Customhouse, St. Louis, Mo., Administration Building, Balboa Heights, Canal Zone, or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Applications should be properly executed, excluding the medical and county officer's certificate, and must be filed with the Civil Service Commission, Washington, D. C., prior to the hour of closing business on December 7, 1920.

NOTICES.

Lowell Institute.—Free public lectures, "The Biology of Death," by Raymond Pearl, LL.D., Director, Department of Biometry and Vital Statistics, School of Hygiene and Public Health, Johns Hopkins University, Baltimore. The dates and subjects are as follows:

"Senescence and Death," December 1 (Wednesday).

"The Chances of Death," December 4 (Saturday).

"The Causes of Death," December 8 (Wednesday).

Correlation of Death Rates," December 11 (Saturday).

"Inheritance of Life Duration," December 15 (Wednesday).

"The Trend of Mortality and Some of its Consequences," December 18 (Saturday).

Given in Huntington Hall, 491 Boylston Street. Doors opened at 7.30 P.M., but *closed at 8 o'clock throughout each lecture.*

Tickets for the course may be secured, free of charge, by applying by mail to the curator of the Lowell Institute, 491 Boylston Street, Boston, and enclosing one stamped, addressed envelope for each ticket desired.

Other free lectures in the Lowell Institute are announced in the program, likewise to be had by sending the Curator a stamped, addressed envelope.

Massachusetts General Hospital.—The first monthly noon meeting of the Out-Patient Staff will be held in the lower out-patient amphitheatre on Wednesday, November 24, at 12 noon.

Program.

1. Mouth Lesions in Their Relation to Systemic Disease. Dr. Leroy M. S. Miner.
2. The Out-Patient Convalescent Clinic. Dr. John Bryant.

Doctors, nurses and medical students cordially invited.

John W. Cummin, M.D.,
For the Committee.

SOCIETY NOTICE.

Norfolk District Medical Society.—A regular meeting of the Society will be held Tuesday, November 30, 3 P.M., at the State Antitoxin and Vaccine Laboratories, 375 South Street, Forest Hills.

This is an excellent opportunity to inspect one of the best biologic plants in the country.

Commuications:

1. The preparation of diphtheria antitoxin, antimeningococcic, and antipneumococcic serums, of diphtheria toxin for the Schick test, and of diphtheria toxin-antitoxin mixtures, with their application in medical practice. Dr. Benjamin White, Director.
2. The testing of various biologic products. Dr. David L. Williams, Assistant Director.
3. The preparation and testing of anti-typhoid-paratyphoid vaccine, and of smallpox virus. Dr. Arthur L. Reagh, Bacteriologist.

The theories underlying the preparation and use of biologic products will be briefly discussed, and all processes involved in their preparation will be demonstrated. The technic and interpretation of the Schick test will be given.

An informal discussion of biologic products will follow, in which all members of the Society are cordially invited to participate.

Bradford Kent, M.D., *Secretary.*

RECENT DEATHS.

Dr. Bernard Lecherzack Barnard died at his home in South Boston, Oct. 28, 1920, aged 57. He was born in Russia, was a graduate of the Medical Department of Kazan, in 1883, and came to America five years later. He was a Fellow of the Massachusetts Medical Society and of the South Boston Medical Society. He is survived by five children, one of them being Mrs. M. J. Konikow.

The Boston Medical and Surgical Journal

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Original Article.

THE LEUKOCYTIC REACTION IN A PARATYPHOID DYSENTERY AND FOLLOWING VACCINE INOCULATIONS.*

By **Geneva Tryon, M.D., Boston,**
Assistant Physician, Boston State Hospital.

The occasion of this report was a dysentery which appeared as an epidemic[1] in 1915 in the Boston State Hospital. The organism which caused the disease belonged to the paratyphoid enteritidis group, but could not be identified with any of the well known members. Clinically, the disease appeared in three forms: a dysenteric-pneumonic, a dysenteric and a diarrheal. The duration of the disease was from five days to three weeks. The majority of the cases occurred among the old and feeble women patients in the Infirmary Department.

The twenty-two blood examinations in the table (I) represent twelve severe cases. The blood picture varied somewhat in different patients and in the same patient during the course of the disease. The total white counts were between 5,100 and 13,300. The differential count was not quite so variable as the total count, in that it remained more constant to the form of the disease. The per cent. of polynuclears was relatively higher and that of the lymphocytes lower in the pneumonic than in the pure dysenteric form. In the dysenteric cases uncomplicated with pneumonia, the lymphocytes persisted rather high during the first two weeks, between 27% and 40%; in two recovered pneumonic cases, the lymphocytes showed a high per cent. in the third week during convalescence, 37% and 43%. A count made in one case of an acute arthritis following a short severe attack of dysentery resembled the pneumonic cases. Eosinophiles were not found in any case during the first week; in the second week they reappeared in 5%-2%. Transitionals gave a higher per cent. in the first than in the second week. In all cases blood platelets were much increased throughout the disease and in early convalescence. There was no evidence of an anemia judging from the hemoglobin per cent. and the character of the red blood cells.

Reports of blood examinations in paratyphoid infections have not been numerous, but a review of them shows either a normal picture or changes in the white blood cells similar to those in typhoid fever. Uhlenroth and Hubener[2] state that there may be a leukopenia in the typhoid form of a paratyphoid B infection with an early loss of eosinophiles and a late relative increase in lymphocytes quite like a true ty-

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* This is one of a series of 16 papers (269,1919.12) offered to Professor E. E. Southard in honor of the decennium of the Bullard Professorship of Neuropathology, Harvard Medical School.

TABLE I. THE LEUKOCYTES IN A PARATYPHOID DYSENTERY.

CASE	DAY	TOTAL	POLY.	LYMPH.	TRANS. L. M.	EOSIN.	BAS.	REMARKS
R. W.	1	6,400	66	29	4.75		.25	T. 104.8°
M. G.	2	6,400	56	29	15			T. 102.8°
E. O'M.	3	13,100	68	31	1			Pneumonic
E. O'B.	3	5,400	59	27	14			
A. S.	4	5,100	77	13	10			Pneumonic. Death 5th day
M. C.	4		54	40	6			
E. O'B.	5		59	33	8			
M. C.	6	12,800	66	30	4			
E. M'K.	6	12,200	76	10	14			Pneumonic
M. P.	7		72	19	8			Pneumonic. Death 11th day
M. W.	8		53	41	4.5	.5		
J. C.	9		80	13	2	.5		Pneumonic
J. M.	10	8,800	63	25	6	2	1	Convalescent
M. G.	13		64.5	30	5	.5		
M. C.	14	10,000	62	34	3		1	
E. O'B.	15	8,000	65	31	3	.5		Convalescent
E. M'K.	17		59	37	3.5	.5		Protracted case
E. O'B.	18		65	26	2	7		Convalescent
T. S.	18	10,000	71	23.5	3.5	1.5	.5	T. 101°. Acute arthritis
M. W.	18		63	33	1	3		Convalescent
J. C.	19		52	43	4	.5		Convalescent
M. G.	23	8,200	65.5	25	9	.5		Convalescent

phoid. In a paratyphoid A[3] infection of typhoid form in this hospital in 1910, blood examinations showed total leukocyte counts between 3,200 and 8,000, with the lowest count on the fourth day. The lymphocytes showed a relative increase on the fourth day, and the eosinophiles, although not entirely disappearing, were reduced on the third day. Rolly[4] in 1911 reported total leukocyte counts made in about thirty-five cases of paratyphoid A and B infections of the paratyphoid form. In the B infections the counts were between 3000 and 7000, not apparently decreasing with the progress of the disease. In one case of paratyphoid A infection, six counts made between the twelfth and the twenty-second day fluctuated between 3800 and 6400. One of the cases of paratyphoid B is of interest in the light of our findings. This patient had a double pneumonia on the thirteenth day with a count of 17,000, falling to 6,200 on the twenty-fourth day with an improvement in the lung condition. Rolly questioned whether the pneumonia may not have been due to a mixed infection. Hall and Adam[5] in the present European war have studied blood smears from soldiers convalescent from dysenteries, typhoid fever and paratyphoid A and B infections. They observed a relative lymphocytosis with a low polynuclear per cent. following both typhoid fever and a paratyphoid A infection up to the thirteenth week. The fact that from the Mediterranean area all convalescents from a paratyphoid A infection showed a normally high polynuclear per cent. indicated to the writers that these patients may have suffered from another form of dysentery, amoebic or bacillary, at the same time. They did not explain the normal polynuclear per cent. found in all convalescents from a paratyphoid B infection, nor did they mention the clinical form of the disease. Ordway[6] in an experimental study of rabbits suffering from a typhoid-like disease caused by the bacillus suipestifer, observed that the total white blood counts were not altered by the infection.

In this epidemic dysentery the one persistent similarity to a typhoid picture was the loss of eosinophiles during the first week. It is probable that the increase in polynuclears in some cases was related to the pneumonic process. In two septicemic pneumonic cases that came to autopsy, the paratyphoid bacillus was found in the lung lesions associated with a streptococcus in one case and a staphylococcus in the other. We have not sufficient data to say whether higher counts are more usual in a dysenteric than in a typhoid form of a paratyphoid infection.

THE LEUKOCYTIC REACTION FOLLOWING VACCINE INOCULATIONS.

Gay and Claypole[7] in their experiments in typhoid immunization found that a specific hyperleukocytosis, preceded by a leukopenia was produced in typhoid immune rabbits by inoculations with typhoid vaccine, and that the increase in cells was due to the polymorphonuclear. The leukocytic response was more rapid and rose to a greater height in the immunized rabbit than in the normal animal. H. I. McWilliams[8] in a more recent report of similar experiments with rabbits noted a hyperleukocytosis which was not of a higher grade in the immune than in the non-immune animal.

Both Gay[9] and McWilliams[10] have described the leukocytic reaction following injections of vaccine in typhoid fever. A chill and rise in temperature are coincident with a leukopenia shortly after the inoculation, and a few hours later, with the lowering of the temperature and a lessening of symptoms, there is a high grade hyperleukocytosis. The relation of the hyperleukocytosis or "leukocytic crisis" to the freeing of the antibodies indicates the possible value of these studies in vaccine therapy and prophylactic immunization. Although the blood examinations in this paratyphoid dysentery have been limited to human cases and have not the exactness of results obtained in animal experimentation, they have a certain clinical value because it has been possible to observe these cases over a number of months.

A polymorphonuclear leukocytosis both actual and relative was demonstrated in one protracted case (M. G.) during the first outbreak of dysentery after a repeated therapeutic dose of the dysenteric vaccine. Six hours after a subcutaneous injection of 75,000,000, the total count rose from 6400 to 19,400 and the polymorphonuclears from 56% to 76% with a loss of eosinophiles. No constitutional reaction followed successive small doses in this patient, although there was an apparent improvement in symptoms.

A polymorphonuclear leukocytosis was observed in a second case eighteen hours after an initial prophylactic inoculation of 500,000,000 and six hours after the onset of a severe constitutional reaction with fever and vomiting. Total count, 18,800; polymorphonuclears, .92; lymphocytes, .08; large mononuclears, transitionals and eosinophiles, 0. This was the only count made in this case. There is no record 11 months later that this patient has had an attack of the disease.

Because of these isolated observations it seemed worth while to study the leukocytic reaction more carefully, and during the seventeen months following the first outbreak of the disease several series of examinations were made, including one woman and four men who had neither the disease nor prophylactic treatment, and four women who had had the disease from nine to seventeen months previously (Tables II and III). Subcutaneous injections of vaccine were given for two or three successive weeks in doses as in prophylactic treatment, beginning with 500,000,000. In two cases the counts were taken at two-hour intervals during the first 26 hours after the inoculation. In all the other cases, counts were taken either during the first twelve or second twelve hours at one-half, one hour, or two-hour intervals.* Differential as well as total counts were made and a control count was made in each case. There was no constitutional reaction observed in any of these cases and the local reaction was a moderate one.

TABLE II. LEUKOCYTIC REACTION FOLLOWING VACCINE INOCULATIONS IN THOSE WHO HAVE HAD THE DISEASE.

Case J. W. Dysentery 11 months previously.
Vaccine 500,000,000

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	6,300	56	36.5	4.5	1.5	1.5
Hours after inoculation						
12	9,100					
14	10,000	70	25	5		
15¾	10,400	70	25	2.5	1	1.5
18	7,200	61	35	3.5	.5	
20	6,800	56	43	1		

Case J. W. Dysentery 11 months previously, seven days after first inoculation.
Vaccine 1,000,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	7,300	57.5	31.5	8	2	1
Hours after inoculation.						
12	11,400	61	30	8	1	
14	11,300	75.5	18.5	5	1	
16	10,600					
18	10,600	76	18	6		
20	10,200	59.5	40		.5	

Case J. W. Dysentery 11 months previously, eighteen days after second inoculation.
Vaccine 1,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% MAST.
Control						
	9,100	38.5	56.5	2.5	1.5	1
Hours after inoculation.						
12¼	4,600	68	27.5	2.5	1	1
13¼	9,900	64.5	25.5	6	2	
14¼	9,400	63	32	3	2	
15¼	17,300	68	28	3	1	
17¼	10,800	64	32	3.5	.5	
19¼	11,500	63	36.5	.5		
21½	11,900	69	30		1	
23½	9,900	63	33.5	2.5	1	

Case A. O. Twelve months after first attack, second day after recovery from second attack.
Vaccine 500,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	7,400					
Hours after inoculation.						
12¼	12,200					
13¼	14,500					
14¼	15,200	76	19	4	.5	.5
15¼	19,500	72	20	2.5	5	.5
17¼	22,700	71.5	20.5	1.5	4.5	2
19¼	13,600	71	22.5	4	2.5	
21½	17,300	60	35	2.5	2.5	
23½	10,000	45	47.5	4	3.5	

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* A number of these counts were made by Mr. John C. Rock of the Harvard Medical School.

Case A. O. Eighth day after first inoculation, tenth day after recovery from second attack.
Vaccine 1,000,000,000.

Time	Total	% Poly.	% Lymph.	% Trans. L. M.	% Eosin.	% Bas.
Control						
	7,000	42	45	5.5	6	1.5
Hours after inoculation.						
14	9,100	58	37.5	1	3.5	
15	9,600	65	33	2		
16	7,800	59.5	34	4	2	.5
17	7,400	62	33	1.5	3.5	
18	7,300	66.5	29	2.5	1	1
19	8,500	73	24	2	1	0
20	8,900	73	24	0	2	1
21	10,700	78	19	1	2	0
22	11,300	71	26	1	2	0

Case M. G. Dysentery nine months previously.
Vaccine 500,000,000.

Time	Total	% Poly.	% Lymph.	% Trans. L. M.	% Eosin.	% Bas.	Temp.
Control							
	7,800	60	35	3	2		98.6
Hours after inoculation.							
2	8,600	72	20.5	5.5	2		98
4	8,200	....	....	....	....		98
6	6,800	56.5	34.5	7	2		98.4
8	9,800	69.5	25	4	1.5		98.2
10	13,300	66	28.5	4	1.5		98.8
12	15,500	54.5	36.5	8	1		98.8
14	13,900	64	30	6	0	.5	98
16	11.700	64	35.5	.5	0		98
18	9,300	71	25	3	1		98
20	10.600	73.5	20	5	1.5		97
22	10.600	76	22	2	0		98.2
24	9.000	63	31	6	0		98.4
26	9,000	78	22	0	0		99.4

Case M. G. Third day recurrent attack, 17 months after first attack.
Vaccine 500,000,000.

Time	Total	% Poly.	% Lymph.	% Trans. L. M.	% Eosin.	% Bas.
Control						
	9,900	60	34.5	5	.5	
Hours after inoculation						
½	13,200	59.5	37.5	2	1	
1	10,700	61	34.5	2.5	2	
1½	9,800	67.25	28.5	4.25		
2	7,600	44	54	2		
3	7,800	66	32		2	
19½	7,100	80	20	0	0	0
20½	10,400	70	26	2	1	1
21¼	11,000	71	26	2	1	0
22¼	10,700	81	19		0	0
23¼	9,600	73	26	1	0	0
24¼	13,700	71	29	0	0	0

Case M. C. Sixteen months after first attack.
Vaccine 500,000,000.

Time	Total	% Poly.	% Lymph.	% Trans. L. M.	% Eosin.	% Bas.
Control						
	12,700	57	40	0	3	0
Hours after inoculation						
2½	8,400	68	26	0	5	1
3	10,400	67	29	0	3	1
6	10,100	52	44	0	4	0
8	10,700	50	48	1	1	
10	11,600	62	37	0	1	0
11	11,400	65	47	0	1	0
12	10,500	60	34	3.5	2.5	

Case M. C. Seven days after first inoculation.
Vaccine 1,000,000,000.

Time	Total	% Poly.	% Lymph.	% Trans. L. M.	% Eosin.	% Bas.
Control						
	12,400					
Hours after inoculation						
2	9,600	56	39	1	4	
4	14,200	58	33	3	5	1
6	9,200	58	31	4	6	1
9	12,000	54	41	3	2	
11	14,000	40	55	4	1	

Case M. C. Nine days after second inoculation.
Vaccine 1,000,000,000.

Time	Total	% Poly.	% Lymph.	% Trans. L. M.	% Eosin.	% Bas.
Control						
	9,100	49	50	.5	.5	
Hours after inoculation						
2	12,500	68	28	1	3	
3	11,500	56	42	1	1	
5	15,100	75	25	0	0	
6	14,600	60	40	0	0	
7¼	14,300	70	30	0	0	
8¼	13,700	60	40	0	0	
10	11,900	74	25	0	1	

Case M. C. One month after vaccination, second day after recovery from recurrent attack.
Vaccine 500,000,000.

Time	Total	% Poly.	% Lymph.	% Trans. L. M.	% Eosin.	% Bas.
Control						
	13,900	50	39	10	1	
Hours after inoculation						
½	12,200	49	45	4	2	
1	7,400	56	40	2	2	
1½	6,200	49	44.5	2.5	4	
2	9,600	79	21	0	9	
3	9,700	51	41.5	5	2.5	
19	8,200	64	27.5	8	.5	
20	9,000	76	19.5	.5	4	
20¾	8,300	63	34	2	1	
21	11,200	66	31.5	1	.5	
22	9,900					
23	12,500	77	18.5	3	1.25	.25

TABLE III. THE LEUCOCYTIC REACTION IN PROPHYLACTIC TREATMENT.

Case W. F. Prophylactic treatment.
Vaccine 500,000,000.

Time	Total	% Poly.	% Lymph.	% Trans. L. M.	% Eosin.	% Mast.
Control						
	11,600	64	29	1	6	
Hours after inoculation						
2	9,400	67.5	28	0	4.5	0
4	10,300	59	35.5	1	4	.5
6	9,300	59	33	1	6	1
8¼	9,500	67	29	0	4	0
10¼	10,800	70.5	25	1	3	.5
22½	12,700	64	30	2	3	1
24½	12,000	69	29	1	1	

Case W. F. Second inoculation.
Vaccine 1,000,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	9,200	67	21	8	4	
Hours after inoculation						
2	11,000	69.5	24.5	3.5	2.5	
4	14,400	73.5	20.5	5.5	.5	
6¼	13,300	74	17.5	2.5	5.5	.5
9½	15,400	73.5	21.5	2.5	2.5	
11½	16,500	78	14	4	4	

Case W. F. Third inoculation.
Vaccine 1,000,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	10,000	69	28.5	1	1.5	
Hours after inoculation						
2	11,500	74	20	2.5	3.5	
3	7,800	60.5	33	2	4.5	
5	12,900	78	18	1	3	
6	13,000	69	21.5	4	5	.5
7	12,600	69	27		4	
8	13,000	75	21		4	
10	13,300	64	32	1	3	

Case C. H. Prophylactic treatment.
Vaccine 500,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.	TEMP.
Control							
	5,100	42	47.5	7.5	3		98
Hours after inoculation							
2	6,800	51	37.5	8	.5	3	98.6
4	7,200	45	47	5		3	98.8
6	9,400	70.5	25	4	.5		99
8	9,400	66	25	6	2.5	.5	98.8
10	10,800	62	29.5	6	2	.5	99
12	12,900	59	29.5	6.5	3	2	99
14	10,400	57	32	8	1	2	98
16	7,800	56	36	5	2	1	98
18	6,800	53	41	5	1		97.6
20	7,200	48	43	7	1	1	97.2
22	6,400	49	40	9	1	1	99
24	7,500	58	29	12	1		99
26	6,800	50	44	5			99

Case S. S. Prophylactic treatment.
Vaccine 500,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	5,400	63	26	6	5	
Hours after inoculation						
12	8,400	62	29	7	2	
14	11,400	63.5	30		5	1.5
16	10,900	56	36	3	4	1
18	12,400	51	40	5	3	1

Case S. S. Second inoculation.
Vaccine 1,000,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	9,400	53	42	3	1.5	.5
Hours after inoculation						
12	19,500	62.5	35.5	1	1	
14	14,800	50	42.5	3	4	.5
16	13,200	72	24	2	2	
18	20,200	73	22	2	3	
20	16,000	64.5	31	3	1.5	

Case F. N. Prophylactic treatment. First inoculation.
Vaccine 500,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% MAST.
Control						
	12,400	69	27	1	3	
Hours after inoculation						
2	14,000	73	23	3	1	
4	11,300	67	29		4	
6	10,200	74	19	2	5	
8	10,200	78	14	2.5	5	.5
10	12,000	60.5	32	2	5	.5
22	14,600					
24	13,000					

Case F. N. Prophylactic treatment. Second inoculation.
Vaccine 1,000,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% MAST.
Control						
	12,200					
Hours after inoculation						
2	14,500	80	15.5	3	1.5	
4¼	23,000	72	21.5	1	4.5	1
6¼	24,000	69	27	1	2	1
8¾	19,400	79	17	1	3	
10¾	16,000	63	30	2	5	

Case H. D. Prophylactic treatment.
Vaccine 500,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	6,600	49	46	1	4	
Hours after inoculation						
12	10,400	61	29	5	5	
14	10,800	69	22	2	7	
16	11,500	77	19	1	3	
18	13,000	60	34	3	3	
20	9,900	58	36	1	5	

Case H. D. Second inoculation.
Vaccine 1,000,000,000.

TIME	TOTAL	% POLY.	% LYMPH.	% TRANS. L. M.	% EOSIN.	% BAS.
Control						
	8,000					
Hours after inoculation						
12	13,200	66	28	5	1	
14	13,500	75	20	2	3	
16	14,300	77	20	2	1	
18	11,500	62	36	2		
20	14,200	59	38	1	2	

The leukocytic reaction consisted of a hyperleukocytosis, with the highest count rising but little above twice that of the normal count for the individual and a relative increase in polynuclears at one or more periods during the following twenty-four hours, this relative increase not always being synchronous with the highest total count.

The reaction was somewhat more marked after the second or third inoculation than after the first, except in one case (A. O.) in which the vaccine was injected shortly after a recurrent attack. In this case the reaction was greater after the first injection of 500,000,000 two days after the attack than after the second inoculation of 1,000,000,000, seven days later. One case (M. G.) referred to above as showing marked reaction to vaccine therapy in the first attack, showed a moderate reaction both in total and differential counts following an inoculation of 500,000,000 nine months later; and on the third day of a recurrent attack seventeen months later gave evidence of a reaction only in a relative increase in polymorphonuclears following an injection of 500,000,000. The diarrhea in this last instance ceased a few hours after the inoculation and there was no evident constitutional disturbance. The recurrent attacks were milder than the first one and appeared usually in the form of a diarrhea.

There is no record that the individuals chosen as normal cases in this series of examinations have had an attack of dysentery or diarrhea.

In comparing the leukocytic reaction with the clinical history in these cases the following conclusions have been made:

1. The stronger normal individuals show more reaction to subcutaneous injections of vaccine than the weaker ones who have had the disease and recurrent attacks.

2. The leukocytic reaction for the individual is more marked during or immediately after an attack of the disease and diminishes with recurrent attacks. This corresponds to the clinical observation that the resistance of the individual to the disease is lessened by a previous attack.

3. The fact that there may be a polymorphonuclear reaction to a subcutaneous injection of vaccine, coincident with the cessation of a diarrhea would indicate the use of a vaccine therapy. In the few cases in which this treatment has been given the results have been favorable for a recovery from an attack.

REFERENCES.

[1] Morse, M. E., and Tryon, G.: An Epidemic of Dysentery at the Boston State Hospital, Due to a Member of the Paratyphoid-Enteritidis Group. Report to be published in the BOSTON MEDICAL AND SURGICAL JOURNAL.

[2] Kolle and Wassermann: Handb. d. path Microorg., Vol. vi, 1913, p. 1050.

[3] Canavan, M. M.: BOSTON MEDICAL AND SURGICAL JOURNAL, Vol. clxxi, No. 15, 1914,.

[4] Rolly: Münch. Med. Woch., Bd. 37-1, 1911, 557-629.

[5] Hall and Adam: Lancet, No. xii, Vol. ii, 1916, p. 514.

[6] Ordway: Jour. Med. Research, Vol. xxviii, No. 1., 1913, p. 49.

[7] Gay and Claypole: Arch. of Int. Med., November, 1914, Vol. xiv, p. 662.

[8] McWilliams, H. I.: Jour. of Immunology, Vol. i, No. 2, April, 1916.

[9] Gay, F. P.: Jour. A. M. A., July 24, 1915, Vol. lxv, pp. 322, 323.

[10] McWilliams, H. I.: Med. Rec., Oct. 16, 1915.

Clinical Department.

THE COMBINED OPERATIVE AND RADIUM TREATMENT OF MALIGNANT DISEASE OF THE NASAL ACCESSORY SINUSES.* †

CASES REPORTED FROM THE HUNTINGTON MEMORIAL HOSPITAL AND THE MASSACHUSETTS GENERAL HOSPITAL.

BY HARRY A. BARNES, M.D., BOSTON.

UP to the present time the results of operative treatment of malignant disease of the accessory sinuses of the nose have not been such as to warrant any great degree of optimism as to permanent results. The prognosis has been distinctly bad. It is the object of this paper to point out some of the reasons for this; to show that some of them should not exist today; and to suggest methods that may perhaps cut down the potency of others.

These causes may be grouped under four headings:

First—The Difficulties of Early Diagnosis. Owing to the fact that the parts are wholly hidden from view, the disease always makes considerable headway before the patient is aware of any trouble whatsoever. This condition is inevitable. But even after the appearance of the first subjective symptoms the diagnosis is often one of great difficulty, more especially if the disease is primary in the antrum. Pain in the alveolus is a common early symptom, and is almost invariably mistaken for some dental affection. Combined with this there may be pain in the cheek, usually mild and dull in character or even what might be termed a sensation rather than a pain, and suggesting a sub-acute empyema. There may be some pus in the middle meatus, though I think this is rare. Swelling of the cheek without redness may occur fairly early, but it is usually of later date than the pain. Transillumination and x-ray will of course suggest empyema. Puncture of the inferior meatus seldom reveals pus, is often negative, but does in many instances show a bloody serum which cannot be accounted for by a simple inflammatory congestion of the mucosa. In those cases in which a small amount of pus is found, it is apt to be mingled with a sufficient amount of this bloody serum to arouse the suspicion that we are not dealing with a simple empyema. Bulging of the naso-antral wall may be evident. Epistaxis, exophthalmus or any actual appearance of tumor mass in the nose are of course of much later date and do not specially concern us here. When they occur the diagnosis should be evident. In any case of supposed empyema of the antrum, acute or sub-acute, which does not run exactly according to Hoyle, but has some of the above peculiarities, an opening should be made through the canine fossa, a good view of the cavity obtained and the exact condition of its mucosa noted. The microscope will settle any doubtful appearances. Symptoms of secondary involvement of the ethmoid usually do not occur until after the antral symptoms have been pronounced for some time. On the other hand, primary disease of the ethmoid gives rise to nasal obstruction and epistaxis, one or both, fairly early. I think the disease is more apt to be discovered in its incipiency here than anywhere else in the sinuses. Once the patient has sought relief for either of these symptoms, the diagnosis should not be long delayed. Nevertheless, the earliest of the cases reported here, one of this type, had had repeated severe epistaxis for two and one half months before he was referred for treatment, and at that time had a soft tumor mass that completely filled the right naris. Delays of this kind, after the stage of doubtful diagnosis has passed, are among the most unfortunate obstacles we have to contend with in the successful treatment of malignant tumors. It would be pleasing if one could be assured that most of them are due solely to ignorance and indifference on the part of the patient.

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† Published in the September issue of the *Laryngoscope*.

Second—The Incompleteness of the Operation. Most of these cases, when they finally come to operation, are operated upon by the general surgeon. With all due respect to him, his operation, excision of the upper jaw, has been a poor one. Many of these cases are primary in the ethmoid; many more involve the ethmoid and sphenoid secondarily; and so it is that only when the disease is confined to the antrum, can this excision of the upper jaw be of any use whatever. It may be noted here that these tumors seldom involve the frontal. Primary malignant disease occasionally occurs there; but for some unknown reason, cancer of the ethmoid shows little or no tendency to advance in that direction. On the other hand, the sphenoid is very frequently involved secondarily.

Third—The Necessity of Removing the Tumor Mass by Exenteration. In order to avoid the dangers either of implantation or of metastases, in operating on malignant disease it is axiomatic that the tumor should be handled as little as possible, and should be removed by an incision through the surrounding normal tissues, the growth itself remaining intact. Obviously this rule must be ignored in operations on the sinuses, since no margin of normal tissue can be removed; and the tumor not only cannot be taken out intact, but must actually be removed piecemeal and by a process of maceration. It is in counteracting the evils of this condition that radium plays its most important rôle in the treatment of malignant disease of the sinuses. In the preoperative stage it may be employed to reduce the vitality of the tumor cells. I have never used it primarily for this purpose; but observation of its effects upon non-operable tumors makes its use in this connection seem feasible. It is, however, on its post-operative use that I should like principally to lay stress. And by post-operative, I do not mean ten days or two weeks after operation. Such delay means, I believe, a loss of much of the help that radium is capable of giving, if used immediately on the whole operative field. A tube of radiating strength of 35 or 40 m.c., screened with steel, placed in the centre of the antral pack and allowed to remain there throughout convalescence, gives a mild radiation of all the parts, except possibly the sphenoid. No burning action results from this, as the tube is screened with steel. There is also the additional protection of distance, all parts of the field being at least a centimeter away from the tube. The radiation is, however, probably quite sufficient to destroy those microscopic particles of tumor that must of necessity be left on certain parts of the bony walls of the cavity, especially in the region of the cribriform plate, and to make less likely metastases due to the crushing nature of the operation. The radium should of course be replaced with each dressing during convalescence. Subsequent radium treatment must be employed, but it seems to me that this immediate radiation is the *sine qua non* of this method of treatment, and will go far towards making the operation a success.

Fourth—The Difficulty of Accurately Observing the Field after Operation. It is difficult to see satisfactorily many parts of the operative cavity by examination through the naris, and impossible to see the antrum at all. In the latter situation especially, recurrence cannot be detected until it has reached a somewhat advanced stage. Even in the ethmoid and sphenoid a more intimate view than can be obtained through the nose is desirable. What may be called the wide open treatment of these cases removes this difficulty entirely. For this purpose a triangular flap of integument, having its base in the upper incision and its apex at the lower limits of the antrum is removed from the cheek, even in those cases in which the skin of the cheek is not involved, leaving a permanent opening into the operative cavity. The older method of simply leaving the wound unsutured and keeping it open by wicking is entirely inadequate, as the parts soon contract and a good view of the whole field becomes impossible. After the wide open V-operation, however, the slightest change in the antrum, ethmoid or sphenoid, may be observed, and appropriate treatment, either operative or with radium, applied at once. The deformity following this is not great, even when a cosmetic plate is not worn. A small piece of cotton or gauze tucked into the opening gives the appearance of an ordinary cocoon.

What cases are operable? In one of our more recent textbooks the statement is made that these tumors are inoperable if they have invaded the ethmoid. This surely is not so. Even without the post-operative treatment with radium, many of these cases would be benefited by radical operation because of the relief from distressing symptoms, especially pain; and occasional permanent cures would undoubtedly be obtained. This is especially true of the sarcomas. With the combination of operation and radiation it is hard to say just where the limit of the operative case should be drawn. There is nothing in the face that is vital and it is remarkable what a large portion of it may be removed without causing a too distressing deformity. Fortunately, too, these tumors form metastases slowly. I am almost inclined to regard any case as operable that does not show involvement of the brain or metastases in the neck. Of course this is a very broad statement and is probably not strictly true. I have long believed, however, that in the past we have thrown up our hands too quickly in the management of this class of malignant growths; and recent experience, together with some unexpected and gratifying results from operation on a group of most unfavorable cases, has tended to confirm this view.

The Operation. The operation is always a bloody one; so much so that a preliminary tying of the external carotid is often done. It hardly seems necessary, however, as the bleeding, no matter how severe, can be controlled absolutely by packing, and has a tendency to diminish rapidly in inverse ratio to the amount of tumor mass removed. In none of my cases was the amount of blood lost sufficient to affect seriously the condition of the patient, nor indeed markedly to prolong the operation. The naso-pharynx is first securely packed. This should be done with care, as nothing is more embarrassing than to find the pack working loose in the midst of the operation. The soft palate is pulled forward with a retractor and a three-inch gauze strip is fed behind it with curved forceps (a small Hooper adenoid forceps is excellent for the purpose). When the space is lightly filled, the gauze should be pressed tightly into place with the finger. By alternately using the forceps and the finger, a firm and uniform pack will be secured. The ether, up to this time, is given by the ordinary cone method. For the remainder of the operation it is given through a Rocci tube, which is now inserted through the mouth into the lower pharynx. A strip of gauze should be packed lightly around it in the pharynx, so as to hold it accurately in position. I know of no other method of etherization as satisfactory for these cases. The patient gets plenty of air and enough ether, without the irritation produced by many of the pumping machines.

The Moure incision is made in the cheek. The upper of the two cuts should not be made too near the rim of the orbit, as the subsequent oedema of the lower lid is much less if a fair margin of tissue be left here. After the front wall of the antrum has been exposed and removed, the main mass of the tumor should be evulsed as rapidly as possible. In some of the softer tumors the finger will be found the best instrument for doing this. In the ethmoid and sphenoidal regions the mastoid curette is serviceable. I have found the small tonsil ring punch invaluable wherever the space will allow of its use. The various angular cutting forceps ordinarily used in ethmoid and sphenoid work are all likely to be of service. When the alveolus and the hard palate are involved, heavy rongeur forceps are necessary. Practically regardless of anatomical considerations, every particle of tumor tissue, all necrotic or soft bone should be removed. I doubt if the bone is usually directly involved except in sarcomas of bony origin. It seems rather to undergo either a pressure necrosis or a necrosis due to the cutting off of the blood supply. At all events, if all soft bone is removed, the remaining bony margins show little or no tendency toward malignant recurrence. Wherever possible, it is of course desirable to remove a small margin of normal tissue. In the sphenoid and ethmoid this is impossible, nor is it desirable in the antrum except in the alveolus and the palate, where it may be accomplished without danger to other important structures. The same is true of the nasal septum. If parts of the antro-orbital wall or of the os planum are gone, it may be a hard question to decide what to do with the eye. If the orbital tissues are apparently not invaded, I believe the eye may be left, post-operative radiation of the parts being depended upon to check any further extension in this direction. If there is any question of the involvement of the orbit, an exenteration should undoubtedly be done. Case 1 in the ensuing report is interesting from this standpoint. After all the tumor tissue has been removed, the V-shaped flap alluded to above is cut from the cheek and the cavity lightly packed with gauze, in the center of which a radium tube* of appropriate strength is placed.

This tube remains in place about two weeks, being reinserted with each dressing during that period. As the tube loses one-sixth of its radiating strength every twenty-four hours, it is to all intents and purposes inert at the end of convalescence. It has been my rule to give these patients three or four subsequent radium treatments at weekly intervals. This has been done even when all of the gross tumor tissue was successfully removed and when no signs of recurrence were present. I believe that this precaution is based on common sense. If any recurrence is to take place, it must of course arise from microscopic cells or fragments that are left in place in spite of the most thorough operation. Ordinary prudence demands that radium be used on them when they are most vulnerable to that form of attack; and although successful cases might result from operation alone, it seems folly not to take this simple precautionary measure before there is any recurrence, rather than to wait until it becomes obvious. In these radium treatments one should be careful to avoid any marked reaction in the tissues. A destructive action in the ordinary sense is not desired, as there is no gross tissue to be destroyed. Such destructive action may do no great harm in some parts of the cavity but it does no good at this stage of affairs. It may cause a very painful slough; and in the neighborhood of the ethmoid or the sphenoid might be dangerous on account of possible bony necrosis.

As to the relative value of these two methods of treatment, operation must be given the first place, in that it sometimes accomplishes its object without the subsequent use of radium. On the other hand, radium without operation is useless. One might as well try to stop a conflagration with a garden hose as to treat these massive tumors of the sinuses with radium alone. It is a losing fight from the start. For this reason, in combining the two methods, the operation must be as thorough as possible. If any macroscopic parts of the tumor are allowed to remain, the chances of subsequent radiation being successful are slight. Case 4 in this series illustrates this well, in that the density and toughness of the tumor tissue made its complete removal in the region of the cribriform plate extremely hazardous. The recurrence was immediate and its course little affected by most vigorous radiation. Thorough operation combined with immediate radiation through a wide opening in the face which for purposes of observation is allowed to remain permanently, will give, I believe, better results than we have been accustomed to consider possible. The following cases are reported in substantiation of this view.

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* At the Huntington Hospital radium is not used as such, but in the form of radium emanations, a gaseous product that is given off from the element itself and collected in small glass tubes about half a millimeter in diameter. These tubes gave off the same kind of rays as radium. These are of three kinds: the Alpha, the Beta, and the Gamma. The alpha and beta rays are extremely burning in character, but have only slight penetrating powers, particularly the former, which are stopped by a single sheet of paper. They constitute respectively ten and eighty-nine per cent of all the rays that pass through the glass of the tube. The gamma rays have little burning action but have great penetrating power. They constitute one per cent. only of all the rays. The tubes are of carefully measured radiating strength and may be used directly on the patient and discarded when their radiation becomes too feeble to be of any further value. If a burning destructive action is desired, the tubes may be used without covering of any sort and either held near the part or inserted directly into the tissues by means of a cannula. When a milder action is wanted, the rays must be screened, that is, certain of the burning rays must be sifted out, and for this purpose either the tube is held a longer distance from the part, by means of gauze, or covered with a steel jacket. Usually both these methods are employed. The severity of the reaction then may be controlled by the radiating strength of the tube, by the time of exposure and the amount and character of the screening. Parts that are not intended to be radiated at all but are in the immediate vicinity of the neoplasm are protected by means of sheets of lead of varying thickness according to circumstances. The unit of radiation is the millicurie, which is equal to the radiation from one milligram of radium.

In this series there were six carcinomata, one small round-celled sarcoma and one fibro-sarcoma. With the exception of the fibro-sarcoma, all were of the hopeless type of case, of long-standing and involving both the ethmoid and the sphenoid. Three (all carcinoma) were operations for recurrence and one (sarcoma) had had an enucleation of the eye one year previously, at which time further operative measures were abandoned because of the extent of the disease in the ethmoid region. The case of fibro-sarcoma shows no evidence of recurrence fourteen months after operation. The case of small, round celled sarcoma has no recurrence twenty-six months after operation. Of the carcinomata three are dead; one is in the last stages of exhaustion, with very extensive recurrence; two are well and with no evidence of recurrence or metastases twenty-five months and seventeen months respectively after operation. One case, a carcinoma involving all the sinuses except the frontal, of over a year's standing, died of septic meningitis following the operation. Of the eight cases, four (50 per cent.) are without recurrence up to the present time.

CASE REPORTS.

CASE 1. C. H. Female. Age, 46. Family History—One sister died of cancer of the breast. Past History—Has always been well. Present History—Right cheek began to swell in August, 1917. Had three molar teeth extracted on that side because of pain. Swelling gradually increased, and she went to the Massachusetts General Hospital September 23rd. Physical Examination at that time showed a grayish mass occupying right nostril and completely occluding it. The nasopharynx was filled with a grayish mass. Transillumination showed the right antrum very dark. The frontals lighted well. Clinical Diagnosis—Sarcoma of nasopharynx. Operation—October 18, Dr. D. C. Greene. Through a Moure incision mass in right antrum and nares was exenterated. Pathological Report from tissue removed. "Irregular soft fragment. Microscope shows large solid masses of undifferentiated cells and stroma. Many mitotic figures. Carcinoma."

She was advised to go to the Huntington Hospital for post-operative radium treatment, but failed to appear until January 14, nearly three months after operation. At that time I found a very extensive recurrence and made the following note of the condition: "Over right cheek is an indefinite swelling, somewhat indurated on deep palpation. Nasal examination shows a granulating mass projecting from the antrum and occupying practically the whole of the naso-antral opening made at the time of operation." She was returned to the Massachusetts General Hospital with question of reoperation, which, however, was considered inadvisable, and on January 25 a long course of radium treatment was begun, which had little effect on the extension of the growth. These treatments were given weekly or bi-weekly, and consisted in the insertion, into the mass, of the usual radium tube screened with steel and of varying strength and time of exposure. On February 11, the mucosa of the right upper alveolus showed signs of involvement and on March 4 was extensively ulcerated. At this time the whole right cheek was very red and swollen and the tumor had entirely filled the right naris. The last radium treatment before her second operation was on April 29.

Second Operation. (H. A. B.) At her urgent request, she was admitted to the Massachusetts General Hospital on May 14. Moure incision through the right cheek. The antrum, ethmoid and sphenoid completely exenterated. Nearly the whole of the nasal septum was found involved and removed. The same was true of the right upper alveolus and palatal process of the superior maxilla, which were also removed. The antro-orbital wall was absorbed anteriorly and the orbital tissues were apparently involved over a surface about 2 cm. in diameter. Inasmuch as the patient's consent for enucleation had not been obtained, only as much of the orbital tissue was removed as was compatible with preserving the eye-ball. The deeper structures of the flap of the cheek were also involved so that the skin in this region was shaved down to the thickness of about one-eighth of an inch. Thirty-five millicuries of radium screened with a steel jacket was placed in the centre of the cavity and held in place by the gauze packing. This was allowed to remain in the cavity throughout convalescence and until she could return to the Huntington Hospital for more vigorous radium treatment. May 22 a tube of 35 millicuries screened with steel and ¼ cm. of gauze was placed immediately under the suspicious area in the orbital region and again ¼ inch away from the suspicious area in the skin flap. Duration one hour in each of these positions. May 29, two tubes of 53.1 and 38.1 respectively with the usual steel and gauze screening were placed in various positions in the cavity, their positions being changed every half hour so that in two hours' time every portion of the operative field received intensive treatment for one-half hour. June 5, 12, 19 and 26 this treatment was repeated. On the latter date the interior of the cavity was clean and there was no sign of any recurrence, even over the suspicious area in the orbit. The skin over the cheek had sloughed through, leaving a triangular opening into the antrum. No sign of carcinoma in this flap. At this time patient weighed 115 pounds. Normal weight, 150 pounds.

I did not see the patient again until December 18. She had been seen several times during the summer by Dr. J. P. Clark, who at no time found any evidence of recurrence. On December 18, there was a good deal of crusting in the cavity, but when this was cleaned away there were no signs of granulation or infiltration. On March 3, 1919, there was a slight granulating area about the size of a split pea on the superior wall of the cavity. This was removed for microscopic examination and the denuded surface radiated with 58 mc., screened with steel and ¼ inch gauze, for one hour and fifteen minutes. Pathological Report on piece of tissue removed —"Simple granulation tissue." Patient at this time weighed 125 pounds. She continued to gain steadily in weight and was referred to Dr. George H. Wright for dental plate and also an aesthetic plate to fill in opening in the cheek. At the present time, June 1, 1920, there is no recurrence. Patient now weighs 150 pounds.

Case 2. J. A. E. Male. Age, 50. Family History and Past History—Unimportant. Present Illness—In June, 1915, he first noticed some diminution in vision of the left eye. Three months later a swelling appeared near the left eyebrow. On December 7, 1915, a Krönlein operation was done by Dr. Lincoln Davis at the Massachusetts Eye and Ear Infirmary. Pathological diagnosis of tissue removed at operation, "Multiple Myeoloma." He came to the Huntington Hospital December 19, 1915. Physical examination at this time showed marked exophthalmus, slight conjunctivitis, both lids somewhat oedematous, inability to completely close the eye. Wassermann reaction was negative. He received radium treatment without any marked effect on the condition of the eye up to January 13, 1917. The exophthalmus had increased somewhat. The vision had decreased, but not sufficiently to interfere with his work. On March 13, 1917, Dr. Verhoeff removed the left eye but found the orbital tissues, anteriorly, normal. The posterior two-thirds of the naso-antral wall and of the os planum were destroyed, through the opening in which a tumor mass could be seen filling the antrum and ethmoid. It was considered unwise to operate further and after convalescence he was again sent to the Huntington Memorial Hospital for radium treatment. This was continued at irregular intervals, radium being applied over the orbital and supraorbital regions until August 13, when I first saw the patient. At that time the tumor mass almost filled the left nostril, involving the naso-antral wall and the lower turbinate. This mass bled freely on palpation. From this time up to April 11, 1918, patient had numerous radium treatments directly to the mass in the nose without any appreciable result. On the above date he was admitted to the Massachusetts General Hospital, where a radical operation (H. A. B.) on the left antrum, ethmoid and sphenoid was done. Pathological Report—"A number of soft, irregular, grayish-white pieces, microscopically examined, shows a tumor composed of small round cells which have considerable deeply staining cytoplasm. The nuclei also stain deeply and are eccentrically placed. Multinucleated cells and mitotic figures are sometimes seen. There are thin-walled blood vessels between the cells with very little stroma. There is no evidence that this tumor arises from the bone marrow. It has the characteristic appearance of certain tumors which are found in the maxillary antrum. Sarcoma."

On May 6 and 22 he received radium treatment to the operative field. There was at this time no sign of recurrence. July 24, complained of soreness in left lower jaw opposite canine and bicuspid teeth. Examination showed a small tumor rising from the alveolar process. When removed by operation the tissues appeared to be inflammatory in nature, so an extensive dissection was not done. Pathological report, however, showed tumor tissue, and on August 7 a very thorough removal of all affected parts of the lower alveolus was done. The cavity was packed with plain gauze in the middle of which 13 9/10 millicuries of radium, screened with steel, was inserted. Radium remained for twenty-four hours. On December 1, 1918, I saw the patient for the first time since June 19. There was absolutely no evidence of recurrence in ethmoid, sphenoid or antrum. Mucosa perfectly smooth, with no granulation or crusting. June 1, 1920, well, with no recurrence.

Case 3. F. M. F. Male. Age, 42. Family History—Negative. Past History—Fifteen years ago had a wart on the right ala of the nose. Five years ago cut it when shaving. It was cauterized by the local M.D., and was afterwards removed. It was then treated by the x-ray, but the ulceration has at no time healed over. He came to the Huntington Hospital September, 1915. At that time he had an ulcerating area on his right ala 1.5 cm. in diameter. The ulceration was not deep and the mucosa of the nose was uninvolved. Diagnosis—Superficial rodent ulcer.

From the above date until June 12, 1918, when I first saw him, he had received radium treatment at appropriate intervals, in spite of which the ulceration had slowly advanced, had partially destroyed the right ala and had invaded the nasal mucosa. When I first saw him the outer wall of the nose was very extensively involved,—to what extent it was impossible to say on account of the tumor tissue filling the naris. Radical operation was advised and was done June 24 (H. A. B.).

Operation—Moure incision over the right cheek and front wall of antrum removed. Antrum uninvolved except naso-antral wall, which was very extensively infiltrated in its lower half. Upper half was somewhat doubtful. The whole naso-antral wall was therefore removed, including all of the lower turbinate. The right ethmoid was extensively involved and was completely exenterated; sphenoidal cavity exposed but no disease found; septum apparently uninvolved except in the immediate vicinity of the old wound of the right ala. Obvious malignant tissue in this region curretted away. There was rather prompt recurrence of the external lesion which has since slowly extended, in spite of all treatment, into the alveolus, over the cheek and into the left nasal cavities. This patient is now (June, 1920) in the last stages of exhaustion.

Case 4. M. H. Female. Age, 52. Came to the Huntington Hospital November 22, 1918. Her symptoms dated back to February, 1917, when she first noticed that she was unable to close her left eye on account of protrusion of the eyeball. The sight was not impaired at this time. Soon after, the cheek below the eye became swollen and numb. Not until September, 1917, was anything worthy of note done, when she consulted Dr. Fisher of Portland, who did a radical operation September 20 for malignant disease of the left antrum. There was some improvement for a short time; but the symptoms returned after about six weeks and have gradually increased in severity. On August 1, 1918, all her teeth were extracted, as the L.M.D. thought this might help her condition. About September 1 she was advised to go to the Huntington Hospital for radium treatment, but was unable to come at that time.

The family history and past history are of no importance. Physical Examination—Poorly nourished woman with prominent and protruding left eye, about the lower lid of which there appears a reddish inflamed and thickened conjunctiva. The entire eye is pushed outward and upward by a mass of new growth along the floor of the orbit. The lower lid is oedematous as well as the whole left side of the face. In the left neck below the angle of the jaw there is a flattened, hard, movable mass about 15 cm. in diameter. Left cheek red and oedematous and with scar of old operation. Nasal examination shows the left naso-antral wall bulging but not completely obstructing the naris. Left ethmoid region filled with tumor mass.

Operation—December 21, 1918, enucleation of left eye by Dr. C. Simmons. Radical operation on sinuses (H. A. B.). Moure incision through the old scar. Antrum and ethmoid regions filled with a dense tumor tissue. This was all exenterated, leaving the capsule of the orbit intact. The bony wall of the orbit, externally and inferiorly, was completely absorbed. Alveolus absorbed as far forward as the extreme anterior limit of the antrum. Soft tissues on the mouth side, however, were intact, and not carcinomatus. The skin over the cheek was infiltrated with tumor tissue. Most of this was removed, leaving a thin integument to cover the opening. A small "V" shaped piece of skin was removed in order to leave an opening through which direct radium treatment could be given. Cavity packed lightly with gauze, in the centre of which a radium tube of 41 9/10 millicuries screened with steel was placed. This radium tube was allowed to stay in place for six days, being removed and immediately replaced with each fresh dressing. Pathological diagnosis of tumor tissue removed, "Carcinoma."

In this case it was not felt that the outlook was at all hopeful, as the tumor tissue was so dense as to make its complete removal extremely problematic. Very prompt recurrence took place; and although subsequent radium treatments were given, they failed in any appreciable effect. Patient died of exhaustion August 7, 1918. Metastases in brain.

Case 5. H.B. Female. Age, 36. Family history and past history unimportant. Present Illness—Entered Massachusetts General Hospital, November 14, 1916, on the service of Dr. C. M. Smith, for lesion of right upper jaw and palate which slowly advanced, in spite of all treatment, until the entire right palate was destroyed and the right superior maxillary region extensively involved. Examination at this time showed the right antrum filled with tumor mass which was thought to have absorbed the post-antral wall and to have invaded the ptorygoid region, as there was considerable limitation of movement of lower jaw. Right upper alveolar and palatal processes markedly infiltrated. There was much pain. Weight, 86½ pounds. Case was considered inoperable and was referred to the Huntington Hospital for radium treatment. Pathological diagnosis of specimen from soft palate: "Anastomosing columns of atypical epithelial cells in an abundant fibrous stoma. Carcinoma." Treatment—Radium treatment was begun January 2 and continued at varying intervals, usually bi-weekly, until May 23. These treatments appeared to retard the extension of the growth, cleaned up the ulcerative surfaces somewhat, and apparently diminished the pain. Weight, 78½ pounds.

Operation—On June 18, she was operated on at the Massachusetts General Hospital (H. A. B.) more for the relief of pain than with the idea of gaining a permanent result. Through a Moure incision the anterior antral wall was removed, the antral cavity emptied of tumor mass, the antro-nasal wall and most of the right alveolar process and hard palate removed. The right ethmoid and sphenoidal cavities were completely exenterated as they were filled with tumor tissue. Neither the post-antral wall nor the antro-orbital plate was affected. The os planum and the nasal septum were intact. "V" shaped excision in integument of right cheek. No radium treatment was attempted at this time. The immediate object of the operation was gained, as the pain was entirely relieved. June 26: Radium, 89 mc. in centre of antral cavity, screened by 2 cm. of gauze. I did not see the patient again until January 12, 1919. During the interval she was seen by Dr. J. P. Clark. July 31, Dr. Clark reports; cavity looking clear and no signs of recurrence. Weight, 62 pounds. No pain except in the right lower jaw with nothing seen to account for it. From this time up to December 11, she was seen only once (September 4), when she received radium treatment. On December 11, Dr. Clark reports her entire left upper jaw involved. Weight, 92 pounds. I saw her on January 12, 1919, when the left side presented a replica of the original lesion on the right. There was no sign of recurrence in any part of the old operated field. Patient died of exhaustion January 20, 1919.

Case 6. W. W. Male. Age, 52. Past History—Six years ago had polypus in left side of nose. This was removed, but recurred one year later. He has had three operations for this condition since that time. Six months ago began to have severe nosebleeds from left side, and more or less obstruction to breathing. On March 1, 1918, he was operated on at the Eye and Ear Infirmary for malignant disease of the antrum. At this time the antrum was emptied of tumor tissue but nothing further was done on account of the very evident involvement of the ethmoid. On March 27, he was again operated on (H. A. B.) at the Huntington Hospital. The usual radical exenteration of antrum, ethmoid and sphenoid was done, with "V" shaped excision of the cheek. Patient died March 30 of streptococcus meningitis.

Case 7. H. E. Female. Age, 50. Past History, Family History—Negative. Present Illness—Duration, sixteen years. Growth removed from throat sixteen years ago. Was told at that time that there was a growth in the nose. Partial operation on this growth seven years ago and five years ago. Recently patient went to an oculist to see about her eyes and was advised to go to Huntington Hospital for treatment of the nasal condition. Physical Examination—Left nostril filled with fibrous growth. Considerable swelling of left side of face without redness, oedema or tenderness. Left eye shows moderate exophthalmus with partial optic atrophy. The tumor mass has apparently absorbed the septum and completely filled all parts of the right naris above the level of the lower turbinate. Wassermann, negative. X-ray shows frontals to be normal. Piece taken for biopsy shows the growth to be fibro-sarcoma. Operation (H. A. B.) March 10, 1919, Huntington Hospital. Curved incision beginning on the left nasal bridge and extending across left cheek over about the central point of the antrum. Soft tissues and periosteum retracted, exposing anterior wall of antrum which was removed. The antrum was found to be perfectly normal except for a very pronounced bulging inward of the naso-antral wall. The tumor mass was found to spring from the nasal side of this wall, from the ethmoid and from the front wall of the sphenoid. The septum, superiorly, had been absorbed by pressure of the tumor, which extended through the opening thus made and presented in the ethmoid region of the opposite side. As much of this tumor mass was exenterated as could be done with safety to the patient. In places, especially in the ethmoid and sphenoid region, the tumor was so tough as to make extreme caution necessary, as the possibility of absorption of the cribriform from pressure had to be borne in mind. I am certain that small parts of this tumor were left in the posterior ethmoid region. Convalescence was complicated by a severe diarrhea, and, as on abdominal examination a marked resistance was found in the upper right quadrant, the question of possible metastases was raised. April 3, she was sent to the Brigham Hospital for observation, but was discharged three days later at her own request, without any definite change in condition. This patient received only one radium treatment. July 11, the cavity was exposed for one hour to 46/5 mc. Since then she has reported at intervals for observation. October 22, 1919, there were no signs of recurrence and she was told to report again in four months. May 28, 1920. No signs of recurrence. Eyesight much improved, but still far from normal.

Case 8. W. D. Male. Age, 40. Came to Huntington Hospital January 8, 1919, for obstruction in left side of the nose. Family history and past history are negative. Present Illness—Two and a half months ago had hemorrhage from left side of nose and since then has been unable to breathe through left nostril. Has had about thirty hemorrhages from that side. Went to the Boston Dispensary and was referred to Huntington Hospital for treatment. Physical Examination—Atrophic condition in right side of the nose with much crusting and a good deal of ozena. In the left nostril is a mass springing from the naso-antral wall and completely filling nares. No signs of metastases. Clinical Diagnosis—Carcinoma of the nose. Operation—(H. A. B.) January 13, 1919, Huntington Hospital. Moure's incision through the cheek. Antrum found uninvolved. Naso-antral wall completely removed with large mass of tumor tissue on the nasal side. Ethmoid and sphenoid found to be involved and were completely exenterated. The anterior two-thirds of the os planum absorbed but the tissues in the orbit apparently not involved. Cavity packed and upper incision only partially sutured with gauze drainage through incision. The usual "V" shaped excision of the cheek was not made in this case as it was hoped that partial closure might leave a sufficient opening for the subsequent observation of the operative field. It was found later, however, to be entirely inadequate for that purpose. Pathological Diagnosis—Carcinoma. Post-operative Treatment—On January 17, he received his first radium treatment. Three steel tubes, 56.5, 54.0, and 42.7 millicuries. Screening, ½ cm. gauze and steel tube. Location—(1) Sphenoidal sinus and posterior ethmoid region. (2) Anteriorly, in the region of the absorbed os planum. (3) In the lower meatus near anterior, inferior angle of the antrum. Duration one-half hour, when all the tubes were shifted so as to give exposure of equal time to other denuded surfaces. A like treatment was repeated January 20. It was found, however, that there was some reaction to the radiation in the septum from the first treatment, and in all subsequent treatments the septum was protected by 2 m.m. of lead. Position of tubes changed at the end of one-half hour so that practically all parts of the operative field received half-hour exposures. February 1, there was no indication of recurrence. February 19: A slightly suspicious nodule just underneath the opening of the sphenoidal cavity. Fifty-four millicuries, screened by steel tube and 3 m.m. of gauze inserted into the sphenoidal opening. Duration of exposure, one hour. March 5: The redundant tissue just under sphenoidal cavity was reduced in size but was still suspicious. A small piece was taken for microscopic examination. Radium treatment as on previous visit. Microscopic examination showed simple granulation tissue. Biweekly visits to the hospital for observation until July, when he was seen by Dr. Greene, who found no evidence of recurrence. The operative cavity clean and with moderate crusting. October 1: Patient first complained of marked tenderness over inner end of scar. He has been seen monthly since that time. This tenderness still persists. There is no evidence, however, of any recurrence. May 27, 1920: Patient is well and shows no recurrence, nor metastases.

Book Reviews.

Functional Nerve Disease. Edited by H. Chrichton Miller, M.A., M.D. London: Henry Frowde, Hodder and Stoughton, Ltd. 1920.

Among the lessons taught by the Great War is the recognition by physicians of the fact that the vast majority of nerve disorders, at first wrongly and popularly considered due to the so-called "shell shock," have their mental and physical counterparts in civilian life. Functional disorders which formerly were not considered adequately in the training of medical students and which were either ignored or treated unintelligently by the majority of practitioners, now are understood more thoroughly. It is the purpose of this volume, *Functional Nerve Disease,* to present to the profession the knowledge on this subject acquired by medical officers in war service. The book is made up of chapters written by various medical officers whose experience in treating war neuroses has enabled them to add valuable contributions to the literature on this subject. Although it is inevitable that, in view of the recent growth of psychopathology, divergencies in opinions, repetitions, and even apparent contradictions appear in such a method of independent presentation, it gives perhaps a truer and more helpful picture of the present state of knowledge than might be achieved by a single author. In a summary by William McDougall, M.D., D.Sc., F.R.S., an attempt has been made to remedy in part the drawbacks of this method by bringing to a focus and harmonizing as far as possible the substance of the several chapters. This book will enable physicians to appreciate more intelligently the relative values of rest, electricity and massage, suggestion, psycho-analysis, discipline, and sympathy in adapting their methods to the individual needs of civilian patients.

Sir Victor Horsley: A Study of His Life and Work. By Stephen Paget. London: Constable & Co. 1919.

Victor Horsley's death in September, 1916, came as a shock to the medical world, for he was by far the most distinguished man of our profession to die a soldier's death at the front. None of the Allies except Great Britain made such a sacrifice. During those busy times of 1916-17 when we were preparing to enter the war, his death passed very largely unnoticed in this country. It is only lately that his greatness has been recognized and honored. The publication of his biography by Mr. Stephen Paget has been an impetus to review his life.

His surgical career began early; by the age of thirty he had created a new department, the surgery of the central nervous system. Ten years of ardent physiological experimentation under Schäfer had led to his appointment as surgeon to the National Hospital for Paralyzed and Epileptic, Queen Square, in 1886. The third decade of his life was filled with three series of investigations, two of minor importance and one of major. He first worked on the cure of myxedema. A small laboratory at the Brown Institution was relegated to him and in it, single handed, he experimented on the physiology of the thyroid gland and the possibilities of surgical removal. Later he investigated at the same laboratory the prevention of rabies, the direct result of which were the enforcement of the Muzzling Order and a remarkable drop in the rate of hydrophobia. These two studies, however, were of minor importance compared with his work with Schäfer, Beevor and Semon on the localization of function in the brain. Localization had its beginning in 1861 when Broca showed the lesion in the third left frontal convolution in a case of motor aphasia. The next step came in 1870. Fritsch and Hitzig noted the motor cortex by a chanced observation on a wounded soldier in the Franco-Prussian War. Later in the same year they did experimental work on dogs which partly confirmed their observations on the motor centers. Ferrier then outlined the motor area by the use of the faradic current in 1873-75. Lastly Schäfer began, in 1884, a series of experiments on monkeys with Victor Horsley, fresh from his surgical training, as his first assistant. They mapped out the cortical areas with exquisite precision, using the galvanic current, and later Horsley continued the same type of fundamental research with Beevor and Semon. It was pioneer work and to Horsley should go much of the credit. Most of his researches have stood the test of time; a few needed modification by Sherrington.

In 1886, when he was only twenty-nine, Horsley turned his attention to surgery. He never lost his interest in the laboratory, however, and we find that, all his life, he continually returned to his experimental work to check up his clinical experiences. He found Queen Square in the same stage as in Paré's time, a period of skull surgery; within a year he had created the new field of brain surgery. As Paget says: "We can count on our fingers the cases of modern brain surgery recorded in our surgical literature up to the time of Horsley's appointment to Queen Square." His first operation was on May 25, 1886, a post-traumatic Jacksonian epilepsy. Hughlings Jackson and Ferrier were present; the operation was successful, and the fits ceased. On June 9, 1887, he removed a tumor from the spinal cord, the first operation of its kind ever performed. A new era of surgery was definitely established. As Osler says: "The young physiologist, trained in surgery by operating upon monkeys, had done what the leading authority on diseases and injuries of the spinal cord had declared only a few years before to be 'not within the range of practical surgery.' It was a great triumph, and deservedly brought fame and success."

In 1906 Horsley gave the Address in Surgery at Toronto before the British Medical Association. In it he reviewed his twenty years of brain surgery and laid special emphasis on the value of the palliative procedure of decompression to save blindness after optic neuritis He also enunciated for the first time the general principles of brain surgery, fundamentals which are still the basis of this special type of surgery today.

All his life he was a leader in a radical temperance movement. His views culminated in a book, with Dr. Mary Sturge, on Alcohol and the Human Body (1907). His extreme position carried him into many controversies and led to a most unsuccessful life in professional politics. This chapter is the tragedy of Horsley's life. It was a blight on his otherwise splendid career and served only to alienate his friends. The war came in 1914 as a distinct relief to this unfortunate situation. He volunteered for active service at once and did most admirable surgical work at Wimereaux in France and later as a consultant in Egypt and Mesopotamia. His letters from Mesopotamia, filled with little pen sketches, are particularly delightful reading and all that was best in Victor Horsley can be read in their pages. Death, from heatstroke, found him working at Amarah, at the apex of his endeavors as a devoted servant to his country.

Mr. Stephen Paget has written a most able biography. It was a difficult task, made doubly so by the widely separate views of the two men. No attempt has been made to suppress or soften and in reading it one obtains a clear view of the scientific and social side of Victor Horsley's life. Much of it is unpleasant reading, but it is comparatively easy for the reader to separate the wheat from the chaff of Horsley's work. Horsley the physiologist and brain surgeon is an unforgettable figure in medicine, the outstanding British surgeon of his generation, and Paget's sympathetic portrayal of this aspect of his life is an exceptional piece of medical biography.

The Topographical Anatomy of the Limbs of the Horse. By CHARNOCK BRADLEY, M.D., D.Sc., M.R.C.V.S. New York: William Wood and Company. 1920.

The Topographical Anatomy of the Limbs of the Horse offers an admirable consideration of the subject with which it deals. The text is presented clearly and logically, with careful explanation of dissecting methods and detailed description of bones, joints, muscles, nerves, arteries, veins, tendons and ligaments. For the convenience of dissectors the various parts of the body are presented in the following order: the thoracic limb, the hoof and its contents, the arteries of the thoracic limb, the pelvic limb, the arteries of the pelvic limb, and the nerve and blood supply of the muscles of the pelvic limb. In spite of the fact that labor difficulties have made it impossible to secure in every instance the scale reductions indicated on the original drawings, the excellent drawings of the various dissections, executed with anatomical appreciation and artistic skill, merit particular commendation.

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THE SIGNIFICANCE OF DEPOPULATION AND PUBLIC HEALTH CONDITIONS IN FRANCE.

There is perhaps no clearer or more appalling example of threatened race suicide in history than the doom which is sealed for France unless her citizens make an immediate and national response to the appeal of her more far-sighted statesmen and physicians. In the absorbing interest of the world's political events, have not the leaders of France as well as the masses of the people ignored a more important issue, and given inadequate consideration to the most vital and menacing problems which confront France today—the questions of depopulation and impaired public health? No nation can long survive which refuses to have children; no nation can flourish which in the pursuit of foreign policies loses sight of the importance of the ordinary laws of sanitation which determine the physique of her manhood. That France is at last beginning to appreciate the mortal peril which threatens her is indicated by the fact that statistics based on the last census have been mapped out and called to the attention of the public.

Excluding the losses in population during the war and also the mortal statistics in the invaded region, statistics show that in the remaining provinces there is not one with more births than deaths, and that there are eleven provinces where the deaths are about three times the number of births. In continental France, in only four provinces, are recorded deaths less than one hundred and fifty per cent. of the births; in other provinces the rate of deaths based on every one hundred births reaches from one hundred and fifty to two hundred and fifty per cent.

Nor is the question of population the only serious issue which France must squarely face. In some towns ordinary sanitary laws such as vaccination, registration of diseases, and the rules regulating water supply and pertaining to transferable maladies are flagrantly ignored. France loses three hundred persons daily from tuberculosis alone. Each year among infants under one year of age there are ninety thousand deaths, forty thousand of which are probably preventable. The physique of the average youth of high school age is a matter of concern to examining physicians; reports show that one-fourth of the students have curvature of the spine and that the majority of them are lighter in weight, shorter in stature, and physically weaker generally than the class before the war. Compulsory physical exercises and fewer hours of intellectual application would help to increase the vigor of the youth of France. The French medical profession is advocating strongly that public health be put under the strict surveillance of the State, rather than left to the energy and initiative of local town authorities. It is obvious that measures of some sort must be adopted at once, as France faces a life and death issue in the matters of depopulation and public health.

"ETHER DAY" AT THE MASSACHUSETTS GENERAL HOSPITAL.

"Ether Day" was celebrated at the Massachusetts General Hospital on October 18, in commemoration of the first use of anaesthetics there seventy-one years ago, when Dr. John C. Warren performed an operation and Dr. William Morton administered ether. Dr. Henry P. Walcott presided at the meeting and paid tribute to the memory of Dr. Morton. In the morning, papers were read and demonstrations were given. In the afternoon, Professor Alonzo Taylor of the University of Pennsylvania delivered an address, "Effects of the War on World Movements in Nutrition," which will be published in a later issue of the Journal. Other subjects presented were: "Syphilis of the Aorta," by Dr. W. D. Smith; "The Practical Value of Dried Cows' Milk Preparation in Infant Feeding," by Dr. W. R. Sisson; "Value of Puncture of the Cisterna Magna in Diagnosis and Treatment," by Dr. J. B. Ayer; "Remarks on Roentgen Therapy," by Dr. G. W. Holmes; "Pneumoperitoneum as an Aid to Abdominal Diagnosis," by Dr. W. Mason; and "Serum Treatment of Pneumonia," by Dr. F. T. Lord. Of particular interest was the room on the fourth floor of the old hospital building, where the operating room has been restored to appear as it did in 1846, when Dr. Warren performed the first operation with ether. The "ether statue," which was erected in memory of Dr. Warren some years ago in the Public Garden, was visited by many physicians.

In observing the seventy-first anniversary of the first operation performed with ether, the physicians and staff of the Massachusetts General Hospital honored an important date in the history of surgical practice—a date which marks the dividing line between the pain and misery of the past and the present epoch of hope and relief from suffering.

MEDICAL NOTES.

The Eye, Ear, Nose and Throat Hospital at New Orleans, Louisiana.—We have received recently the twenty-ninth and thirtieth annual reports of the Eye, Ear, Nose and Throat Hospital at New Orleans, Louisana, for the years 1918 and 1919. This hospital is designed especially for the treatment of persons who are unable to pay for medical advice, and all others are excluded from the hospital by order of the Board of Trustees. There can be no greater evidence of the skill and care of the hospital surgeons than the fact that although over a thousand operations were performed during the year, there was not one fatality in 1918. There were treated during 1918, a total number of 7,908 new cases; of these there were 3,344 eye cases, 4,540 ear, nose, and throat cases, and 24 dermatological cases. The consultations given the patients numbered 39,960, and 1,776 operations were performed; 743 patients were admitted to the wards, with no deaths. In 1918, 156 men from the Army and Navy were given treatment at the hospital. Visits were made to the School for the Blind and that for the Deaf at Baton Rouge, where the pupils were examined and treatment prescribed or operations performed according to individual case requirements.

During the year 1919, the number of new cases receiving treatment at the Eye, Ear, Nose, and Throat Hospital increased to 8,151, to whom 38,657 consultations were given. A total of 2,582 operations were performed, and 996 patients were admitted to the hospital wards. Enlisted men to the number of 342 were given treatment, and another war service was performed by the Unit established at the hospital for the examination of candidates for the flying corps. The usual visits to the School for the Deaf and the School for the Blind, at Baton Rouge, were made. The free distribution of diphtheria antitoxin was continued during both 1918 and 1919. The increased service which the hospital has been called upon to render has made it necessary to make plans for the erection of a new building in order that the work of the hospital may be carried on efficiently in the future.

Principal Causes of Death in the United States.—The following statistics based on the mortality records of the industrial department of the Metropolitan Life Insurance Company for the first half of the year 1920 are of considerable interest, although it should be remembered that they apply to a selected group and cannot be compared with rates for the country as a whole. The figures are based on a group of approximately thirteen million persons.

In the first half of 1920 there was a decline of 10.4 per cent. in the death rate for the white policyholders from that shown for the first half of the year 1919, and of 5.7 per cent. for the colored. During the first quarter of each of these years there was a high mortality from epidemic influenza. During the first few months of 1919 the country was by no means through with the epidemic which began in the fall of 1918, and the mortality was still far above the normal. During the first quarter of 1920 the second influenza epidemic was at its height and there was again a high death toll, but the death rate for this quarter was lower than that for the corresponding quarter of 1919.

Comparison of the second quarter of 1920 with that of the corresponding quarter of 1919 shows a decline in the mortality rate.

Analysis of the mortality due to the most important causes of death shows that the chief factors in the decline of the general rate were the marked declines in the death rates for tuberculosis, pneumonia, influenza, and accidents.

Despite the decline in the general rate and in the rates for the important diseases mentioned above, the picture is not an entirely favorable one. In the case of the principal infectious diseases of children—measles, scarlet fever, whooping cough, and diphtheria—the mortality was higher in each instance during the first part of 1920 than it was during the first part of 1919. For measles the mortality was almost three times as high, and for whooping cough it was well over twice as high. The scarlet fever and diphtheria rates also show increases.

The rate for conditions incidental to the puerperal state shows a very decided increase for the first half of 1920 over that for the corresponding part of 1919. For the former period the rate for the white policyholders for these diseases increased 36.6 per cent. over the rate for the first half of 1918. Closer analysis shows that increased mortality from puerperal septicemia was very largely responsible for the higher death rate for puerperal conditions.

Epidemic influenza, which raged in January and February, 1920, caused 6,536 deaths. These figures may be compared with 11,073 deaths from this disease during the first six months of 1919. There was a more pronounced drop in the death rate for 1920 for both white and colored policyholders.

Although influenza registered a very marked decline in the second quarter of 1920 as compared with the first quarter, it was, nevertheless, responsible for the deaths of 1,139 policyholders. The rate for this disease during the second quarter was 29.4 per 100,000 white persons exposed, and 71.0 for colored.

Nurses Needed by the Public Health Service.—The U. S. Public Health Service needs hundreds of graduate nurses for its general hospital work but also and particularly for the care of former soldiers suffering from nervous and mental disorders. So great is its need for the latter class that it is probable that at present enough trained nurses are not available in the country. The Public Health Service accordingly purposes to establish a training school for nursing in neuro-psychiatric diseases in its special hospital (No. 49) on Grays Ferry Road, near Philadelphia, where nurses with general training may take a special course in this class of work. This hospital has a capacity of 240 patients and will afford exceptional opportunities for instruction in the most modern treatment.

An appeal is made to nurses to come forward for this work; for if they do not do so there seems to be no one to take their place. The hospitals now operated by the U. S. Public Health Service are already 150 nurses short; and the Service faces the necessity of opening several new ones with an inadequate force. Applications should be made to the Surgeon-General, U. S. Public Health Service, Washington, D. C.

Public Health Service Leases Altamont Hotel.—The U. S. Public Health Service has leased the Altamont and Avenel hotels, adjoining Fort Thomas, near Newport, Ky., across the river from Cincinnati. The Altamont is to be used as a general hospital for the seventh district of the Public Health Service, which comprises the states of Ohio, Indiana, and Kentucky. The Avenel, which is ten minutes walk from the Altamont, will serve as quarters for the hospital staff.

The Altamont is beautifully located on a bluff overlooking the river. It is in good condition and can be occupied at once for non-operative cases, as certain necessary improvements in the kitchen can be made while the building is in use. The same is true of the operating room that is to be built.

An important feature of the hospital will be its bathing facilities. For some years mineral waters from springs in the vicinity have been utilized, with or without electricity in baths for the hotel. Their therapeutic value has long been recognized.

The hospital will have about 200 beds.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending November 20, 1920, the number of deaths reported was 192 against 193 last year, with a rate of 13.38 against 12.64 last year. There were 30 deaths under one year of age against 25 last year.

The number of cases of principal reportable diseases were: Diphtheria, 53; scarlet fever, 18; measles, 10; whooping cough, 19; typhoid fever, 2; tuberculosis, 33.

Included in the above were the following cases of non-residents: Diphtheria, 8; scarlet fever, 5; measles, 1; tuberculosis, 6.

Total deaths from these diseases were: Diphtheria, 4; scarlet fever, 1; typhoid fever, 1; tuberculosis, 9.

Included in the above were the following cases of non-residents: Diphtheria, 2; tuberculosis, 1.

Anterior poliomyelitis cases, 2.

Thurber Medical Association.—At a meeting of the Thurber Medical Association held on October 22, the following officers were elected: Dr. Solon Abbott of Franklin, president; Dr. Sallie H. Saunders of Hopedale, vice-president; Dr. John M. French of Milford, secretary; Dr. William L. Johnson of Uxbridge, treasurer; Dr. H. L. Keith of Milford, librarian; Dr. John H. Wyman of Medway, orator for 1921; Dr. Frank T. Harvey of Milford, alternate; Dr. J. William Ledbury of Uxbridge, Dr. Saunders, Dr. C. C. Weymouth and Dr. Wyman of Medway, Dr. C. H. Randall of Franklin, and Dr. J. F. Jenckes of Wrentham, program committee.

Gifts for Medical Research at Harvard University.—By the will of the late Mrs. William J. Wright, Harvard University will receive the sum of $23,000, to be known as the "William J. and Georgiana B. Wright Fund," the income to be used for medical research and the advancement of the medical and surgical sciences. The late Dr. James Ewing Mears of Philadelphia has made a bequest of $14,000 for the maintenance of a scholarship in medicine and for the work of the Cancer Commission. Elwin T. Atkins of Boston has given $12,000 for tropical research in economic botany.

Charlestown Medical Society.—At a recent meeting of the Charlestown Medical Society, the following officers were elected: Dr. Edward E. Allen, president; Dr. Wilfred G. Grandison, vice-president; Dr. John G. Breslin, secretary; Dr. William L. Quigley, treasurer; Dr. John J. Fitzpatrick, Dr. Francis P. Silva, Dr. Joseph E. McDermott and Dr. Howard Flagg, executive committee.

NEW ENGLAND NOTES.

Appointment of Dr. Philip Hadley.—Dr. Philip Hadley has been appointed to the faculty of the Department of Bacteriology and Hygiene, School of Medicine, University of Michigan. Dr. Hadley was formerly professor of bacteriology at the Rhode Island State College and biologist at the Agricultural Experiment Station.

War Relief Funds.—The New England branch of the French Orphanage Fund has acknowledged contributions to the amount of $621,994.43. The sum of $366,509.44 has been contributed to the American Memorial Hospital at Rheims. The following report of the temporary hospital at Rheims for the year from June 1, 1919, to June 1, 1920, shows how urgently its work is needed:

Number of admissions June 1, 1919 to June 1, 1920	922
Number of discharges June 1, 1919, to June 1, 1920	886
Number of transfers, June 1, 1919, to June 1, 1920	19
Number of deaths, June 1, 1919, to June 1, 1920	20
Number of births, June 1, 1919, to June 1, 1920	225
Medical Surgical Clinics:	
Number of cases treated	12,920
Maternity Clinic:	
Number of patients examined	334
Dental Clinic:	
Number of operations	5,152

New England Surgical Society.—The annual meeting of the New England Surgical Society was held in Providence, Rhode Island, on October 6 and 7, with a large attendance. The papers, discussions, and proceedings of this meeting will be published in full in later issues of the Journal. The following resolution was passed on motion of Dr. Daniel F. Jones:

"Resolved, that the New England Surgical Society, realizing the scarcity of nurses for the care of the sick in hospitals and in private practice, believes that the situation could be improved by a modification of the requirements for the registration of nurses."

In conjunction with the meeting, clinics were held at a number of local hospitals.

Obituary.

EDWIN LEWIS DROWNE, M.D.

By Edward Waldo Emerson, M.D., Concord, Mass.

Dr. Edwin Lewis Drowne, good and faithful man, skilful and advancing physician and surgeon, died in Roxbury on the twenty-fourth of October. He was born in East Boston in 1877, and studied his profession at the Harvard Medical School. His earlier education came in that remarkable epoch when Lister's application of Pasteur's wonderful discoveries to surgery was giving results that seemed almost miraculous. Then, for the first time the abdomen could be safely opened, and lives were daily saved by the operation for appendicitis. Operative surgery was Dr. Drowne's *forte* at first, and soon after his term of service at the Boston City Hospital had expired, he was appointed leading surgeon of the Relief Hospital in Haymarket Square. Such being the case, Dr. Drowne's future history was interesting. He had a student's curiosity, an open mind, and courage to venture into and explore new ground. Appendicitis operations seemed almost in fashion; but the diagnosis sometimes was mistaken, often they were done too late; withal, they were very expensive, yet intestinal stasis came alike to poor and rich.

About this time (1900), Dr. Drowne moved to Concord, where he became a highly valued and successful general practitioner. But, skilful operator as he was, he less and less used the knife, and treated intestinal stasis, unless the case had gone too far, by skilful manipulation, deeper and stronger than *massage*. By this means the obstruction was broken up and poisonous gases released. He was surprised to find how many various and obscure ailments were completely relieved by this method. He would not talk in public before he was sure of the facts. Then he urged them, as opportunity offered, at meetings of medical and surgical societies, where, at first, they sometimes met a very cold reception from persons who, later, were glad to learn from him more of his methods. He has erroneously been supposed to look upon the intestine as the base of all ills. He knew it was one of the three main foci of infective toxemia, the other two being the tonsils and the teeth; but he chose the treatment of intestinal stasis as his contribution toward the preventive medicine of the future. So important did he feel this subject to be that, to the great regret of the Concord people, Dr. Drowne, in 1915, moved to Boston for a wider field of study and usefulness. His mind was ever intent to find and prove possible help for persons suffering from causes anatomical or physiological until lately unsuspected, like pressure on certain small glands whose important offices are only lately discovered.

Into what Dr. Holmes would have called "the pseudo-science" of osteopathy, Dr. Drowne looked respectfully and carefully with a view of separating the wheat from the chaff, in the same spirit that William James did into alleged spiritual communications.

But in his last years, the Doctor had an earnest desire to solve the mystery of some distressing chronic diseases which have been deemed hopeless. He studied epilepsy, and, in some cases in children, had seemed, to their parents, remarkably to have improved their condition, although he himself was very careful and modest in his estimate of these successes. However, with the encouragement and furtherance of friends, he set forth to visit scientific physicians in various parts of the United States to compare notes and, if possible, to find new and cheering light on old and grievous problems.

On this western journey, Dr. Drowne had warning symptoms that his life might not be long. He came home, but still was active in the help of others, and in spite of such rest as he felt willing to take, his strength waned in the early autumn. Still he attended to patients faithfully and beyond his strength. In the latter weeks his pain was great, but always bravely borne. Only in the last days was his suffering relieved. He died in the Baptist Hospital in Roxbury on Sunday, October 24.

Dr. Holmes' "Tribute to a Physician" may well be quoted here:

"How blest is he who knows no meaner strife
Than Art's long battle with the foes of life!
No doubt assails him doing still his best
And trusting kindly Nature for the rest.
Sharp are the trials, stern the daily tasks
That suffering Nature from her servant asks.
What does his saddening, restless slavery buy?
What save a right to live, a chance to die?
Answer from hoary eld, majestic shades,—
From Memphian course, from Delphic colonnades.
And ye, the nearer sires, to whom we owe
The better share of all the best we know.
Speak from the past, and say what prize was sent
To crown the toiling years so freely spent!
List while they speak:
In Life's uneven road
Our willing hands have eased our brother's load;

One forehead smoothed, one pang of torture less,
One peaceful hour a sufferer's couch to bless,
Life's treasure rescued like a burning brand
Snatched from the dread destroyer's wasteful hand;
Such were our simple records day by day,
For gains like these we wore our lives away.
In toilsome paths our daily bread we sought,
But bread from Heaven attending angels brought;
Pain was our teacher, speaking to the heart,
Mother of pity, nurse of pitying art;
Our lesson learned, we reached the peaceful shore
Where the pale sufferer asks our aid no more,—
These gracious words our welcome, our reward;
Ye served your brothers; ye have served your Lord!"

Correspondence.

MATERNITY AID.

Boston, Nov. 15, 1920.

Mr. Editor:—

One of the reasons which prompted a previous communication was to develop discussion of the maternity aid project.

Dr. Miller's communication is gratifying in that he has presented certain views relating to this subject. The President of the Society reported to the Council that only about seven hundred of the four thousand members of the Society replied to the questionnaire of the Commission of which he is the chairman. Whether the phraseology of my letter was apt or not, may be debatable. To some it seems to apply to the attitude of the great majority of the Society, but no one would, in my opinion, infer that a man of Dr. Miller's reputation was referred to. The words "loyalty and intelligence" applied to the subject presented and not to the attainments of individuals. The effort of the local medical society and its delegates, referred to by Dr. Miller, was evidence of effective interest.

Dr. Miller and I are in accord in that we do not approve the Spencer Bill. Is it not possible that starting on that basis some plan may be developed which may secure the support of the profession?

There seems to be evidence that the Legislature will be inclined to enact some law relating to this subject. If the Legislature declines to act, the threat has been made that an effort will be made through the initiative and referendum. Is it not the better policy to come forward with some constructive recommendation rather than appear to be antagonistic to every feature of the proposed legislation?

It must be conceded that the proponents of the bills previously presented were actuated by honorable motives, but since the administration of any method of maternity benefit should be to a large extent a medical problem, the profession should, in my opinion, be the largest factor in deciding the character of law relating to this subject.

The suggestion of Dr. Miller that "the control of the entire medical profession by the State Board of Health will be intolerable," does not seem to me to apply, because the State Department of Health has always been coöperative when dealing with physicians, and seldom arbitrary. Some board or commission must function if any law is adopted. Nobody contends that the practice of obstetrics is universally bad but it is perfectly well known that there are many men in Massachusetts who are not competent, according to the best medical standards, because the Legislature has not required applicants for registration to have premedical intellectual training before taking up the practice of medicine. The state has virtually said that all we want of physicians is mediocrity, and until the Board of Registration in Medicine is given sufficient authority, all available agencies should be interested in efforts to improve medical efficiency.

In order to secure the best results in dealing with parturient women, and with infants, for the purpose of providing good medical service and material aid, a general scheme should be worked out which will also give all useful information relating to the morbidity of pregnancy and infancy.

The application of preventive medicine must be based on knowledge which would be available under the scheme suggested in a former communication.

Walter P. Bowers.

A TRIBUTE TO DR. DROWNE.

November 12, 1920.

Mr. Editor:—

Every so often, one of our associates in medicine conceives an idea on which he elaborates and works until he makes it of benefit to mankind.

Such a man was Edwin Lewis Drowne.

Born May 18, 1878, after his elementary education, he entered Brown University, but left there before graduation to come to the Harvard Medical School, from which he was graduated with the class of 1904. He then became a surgical house officer at the Boston City Hospital and after finishing this service he was resident surgeon at the Relief Station for three years. In 1909 he married Miss Agnes Marks of Boston, Mass.

During the year 1910 he was invited to go to Concord by a group of citizens, headed by Dr. Edward W. Emerson. This invitation he accepted, and for five years was a very successful and happy general practitioner. During the last year or two of that period he became interested in intestinal stasis and developed an exceptional ability in manipulating the intestines through the abdominal wall. The story of his success in treating patients in his self-perfected manner spread and he finally found his time mostly, and his interest entirely occupied with stasis cases. When this became evident to him, he got another doctor to take the general practise and moved back to Boston.

For the past five years he grew in experience, skill and fame. He knew what he could do with many cases, but he purposely kept to himself, for he felt that many of his fellows did not understand what he was working at. Nevertheless, patients came from far and near and in the last two years he was made happy by having cases referred to him by men who originally criticized his work. Certain cases of epilepsy were made better by his treatment and this stimulated his interest in that disease. He gave up his practice for five months during the winter of 1919 for the study of epilepsy, and visited men in various localities in the United States who has specialized in it.

We shall never know just what he discovered, for the summer of this year found him in failing health and increasing pain. This he kept to himself so closely that it was a sad surprise to his friends when they heard of his illness and death from cardiac insufficiency.

We feel that we have lost a friend, that Boston has lost an able doctor, and that the profession has lost an original thinker and investigator.

Respectfully yours,
Hilbert F. Day,
J. Dellinger Barney,
John Dane.

PHYSICIANS AND MEDICAL LEGISLATION.

Boston, 8 November, 1920.

Mr. Editor:—

At a recent meeting of the Middlesex South Medical Society, Dr. Alfred Worcester took occasion to speak to the assembled members in the capacity of President of the Massachusetts Medical Society about the carelessness of the members of that Society regarding their professional interests as affected by proposed legislation. The particular reason for his speaking on this subject at that time was the very meagre response which he had received to a questionnaire sent out by a special commission of which he, as president of the Massachusetts Medical Society, had been appointed by the Governor to head. The object of the commission's questionnaire was to ascertain the opinions of the profession of the state regarding the merits of the proposed maternity bill. So small a percentage of the men to whom the letter was sent paid any attention to it that Dr. Worcester very naturally felt that the profession was indifferent to a subject that is likely to affect them very seriously. It also would certainly injure their chances of having any influence upon legislative matters in the future, where their interests were at stake, if they could not present a united front now and show that they were really alive to the significance of the question at issue.

There was a time when the profession was looked up to and the opinions of professional men, individually and collectively, were held in high esteem. This attitude is rapidly changing and the reasons are twofold. The profession of course no longer holds any monopoly of the educational advantages of the people and, though this is doubtless the chief reason, it is by no means the only one. Another reason, and one carrying great weight, is the apathy of these bodies of men to questions of the day which, while perhaps of a quasi-professional concern, are still of a much more paramount professional interest than they are given credit for being by the profession.

Where there are two classes of citizens having interests in common and one class shows itself unconcerned in the public questions at issue, there can be but one outcome and that is, that the party with a wide awake makeup is certain to dominate the field, and it will inevitably have developed machinery by which it will be enabled to keep any situations which may arise, well in hand.

The ease with which political exigency may sieze upon some proposed movement for the amelioration of the condition of the unfortunate or the less fortunate is well illustrated by the situation in Great Britain today as regards the Medical Practice Acts. The present Act was put in force without any adequate consideration of the questions involved, because it was seen that it was capable of being turned to political account on the "hustings" by the unpreparedness of those whose interests were most vitally to be affected and who were left in a position where they could make no effective resistance to the passage of the legislation. The result has been that the medical profession in England is being rapidly socialized and by far the least serious consequence which will grow out of this legislation will be the deprivation of the activity of the members of the medical profession from making as good a living as formerly. The dignity of the profession has been lowered and it will offer less attraction on this account to the type of men who formerly flocked into it. Because of this, the public is bound to suffer and the advancement of the science of medicine will receive a setback.

It is from failing to be alive to the issues of the day where the interests of the medical profession are primarily at stake, thus leaving a loophole where political opportunism may step in, that one method of negativing the influence of the profession has its origin.

From a little different angle, but still through the playing of politics, it is that another sort of injury may be done to the interests that the medical profession champions. Practical politics is not a game that doctors succeed very well in playing, and many a cause that deserves to win goes down to defeat because of this failure on the part of physicians.

To prove this it is only necessary to refer to experiences which are common enough to those who are called upon from time to time to appear before legislative committees in the interest of proposed public health enactments. Take, for example, the effort made last winter before the House Committee on Public Health to secure the enactment of legislation which would put Massachusetts in the same class as a majority of the states of the Union in the matter of the requirements for medical education. Our standards have always been lower than those of most any other state, and because the state does not require of the matriculants in her medical schools the standard preliminary educational requirements, graduates in medicine from our medical schools may not have the advantage coming from reciprocity with other states when they may wish to go elsewhere to practice. No state in the Union has reciprocity with Massachusetts because our legally imposed preliminary requirements are so low. At a hearing, where it was sought to show the necessity for remedying this defect in our state, "leave to withdraw" was given the petitioners because of the unwillingness of the osteopaths and two medical schools with notoriously low standards to secure the proposed requirements. Time enough for these schools to affect the necessary changes was to be provided, but they preferred to cater to the elements in the schools who were willing to play upon the credulity of the public and encourage it to entrust to an inadequately trained profession matters of such grave significance as the lives and health of the people of the commonwealth. The opposition was represented by the dean of one of these schools and a lawyer who was not only unscrupulous, but unsound mentally, as his subsequent history has proved. The dean of the school, who was spokesman for the opposition of the osteopaths, admitted that they had no interest in having the sciences fundamental to medicine taught their students, and did teach and would teach only so much as was necessary to enable them to come within the law. It was their belief, he said, that all that was really necessary for a graduate from that school to know would be encompassed by a familiarity with the principles peculiar to osteopathy. Anatomy, physiology, chemistry, pharmacology, not to mention biology and physics, were not essential to equip a man to deal with the problems which the practice of osteopathic medicine assumes that you should be prepared to meet. The osteopath seeks to practice what the state recognizes as a branch of medicine and in this state is licensed to practice by the Board of Registration in Medicine. A further illustration of the need for concerted action which shall be based upon the knowledge of what concerns public health may be cited. This illustrates how an executive officer may permit a matter which is of purely personal concern to come between him and the exercise of his best judgment upon a matter affecting so serious a concern as the health of the public. The state seeks to guard her citizens from being preyed upon by incompetents and charlatans. To do this she sets certain general educational and professional standards, up to which they must measure. As interpreters of these standards and as examiners of those aspiring to practice their profession in the state, the Governor is empowered by law to appoint Boards of Registration and fill vacancies as they may occur there. There are, throughout the state, in all the professions, local organizations or societies gotten together by the best men in the several districts for the purpose of meeting and discussing professional matters for their own mutual benefit. These societies are state, county, or district organizations. It has become the custom for the state society of one profession to furnish the Governor's office with a list of about a dozen names of men who, in their opinion, would fill most acceptably positions upon the Board of

Registration. There would seem to be no good ground for doubting they would come at least as near being able to select the best men in the profession as any one else. The list has always been non-partisan, both parties being equally well represented. A recent Governor, who had ambitions to be returned to Congress at the expiration of his gubernatorial term, having to fill a vacancy in this board, selected a wholly undesirable man and appointed him without taking advice from any of those who were best able to appreciate the requirements of service on a Registration Board. A committee of remonstrance waited upon him and, after offering a number of excuses as reasons for his action, he had the effrontery to produce from his files a letter, signed by a fraternal order in that part of the state where his appointee lived, thanking him "on behalf of 16,000 members of that order for having made that appointment."

Who can doubt that such action on the part of an executive would have been impossible if the profession concerned had been on record through their activities, as having a far-reaching influence among the voters of the state where their professional interests were at stake?

The public is not slow to let its opinions be known through channels that are appropriate, when it is made to see what the real issues are and wherein these issues affect it. It is beginning at the wrong end and is a waste of time to attempt to convince a legislature of the importance of any enactment pertaining to a professional matter. The court of appeals should be the profession and the influential lay public in the home districts of the individual legislators. When the pressure is brought at a point remote from the source of the electing constituency, where it is possible to subject the proposed legislation to the manipulations of adroit political "log rollers," the chances of sound action on questions of professional importance are seriously imperilled.

It is for these, as well as other reasons, that the appeal of the President of the Massachusetts Medical Society, when he issues a call for advice upon any question which, in his opinion, vitally concerns the interests of the public health and involves the well being of the physicians of the state, should receive the fullest and most hearty response. This is of all the more importance when the Legislature itself has, through its Chief Executive, invited the coöperation of the medical profession in helpng the law makers in their decision.

Charles F. Painter.

PLEA FOR A DISABLED PHYSICIAN.

Vienna, Oct. 24, 1920.

The generous gift of the American doctors to their Viennese colleagues has been expended in food and clothing and is being distributed through the "Central Relief Committee for Doctors in Vienna." Through its agency, a large number have been relieved, but some, and these are among the most needy, require more. These are the doctors who were wounded in the war while performing their medical duties and who, in consequence, can no longer practice their profession.

The "Union of Austrian Intellectuals" has agreed with the Central Relief Committee that such doctors shall have first claim upon the food and clothing which they distribute. But there is one of our Viennese doctors, Herr Phil. et Med. Dr. Roland Abl, Vienna xiii, Riedelgasse 5, who, through his service at the front, where he aided friend and foe alike was so severely wounded that he was permanently disabled. The Central Relief Committee in Vienna is not in a position to supply a sufficient, or even a permanent partial, relief to this colleague, either from its own relief funds or from those which have come from outside. And they have consequently recommended him to our "Union of Intellectuals Disabled through the War." We have looked into his case and decided to do all in our power to help and, with this in view, we are now applying to you.

Dr. Roland Abl has lost the use of both hips and has suffered other severe injuries so that he can only drag himself a few steps on crutches and can only with great difficulty either stand or sit.

He was devoting himself to research, and his works on uric acid, published before the war, met with quite sensational success and brought him into touch with the foremost American doctors.

His case is recognized as a most deserving one by Dr. Pirquet, the general commissioner of the American Relief Mission for the Children of Vienna, as well as by other members of the American Mission. Dr. Pirquet has also asked Miss B. Lewis, in Vienna, to give her name to this plea in his behalf.

Would it be possible for you in America who have already done so much for your Viennese colleagues, to add still this and to help this most needy of all the Austrian doctors?

Dr. Roland Abl is now cared for in a Nervenheilanstalt, where he has a room and medical care. This can be continued for only a few months longer. After that he has only the prospect of becoming one of many in a ward of some city hospital for incurables, where any pursuit of his research work or use of material already collected would be impossible. We feel that this would mean serious loss to medical science.

We desire to ensure to him at least the privacy of a single room and the means so that he may be able to publish valuable material which he has already collected. To do this will require a sum which is beyond our present powers to raise.

Should you feel able to contribute, please forward money in care of

The Anglo-American Relief Mission of the Society of Friends, Singergasse 16, Wien 1.

The Union of Austrian Intellectuals
Disabled through the War.
D. Grünald.

Miscellany.

NOTICES.

New England Pediatric Society.—The sixty-sixth meeting of the Society will be held at the Boston Medical Library, Friday, Dec. 10, 1920, at 8.15 p.m.

1. The Election of Officers.
2. The Use of Irritaton and Counter-irritation in the Treatment of Disease.
   George D. Cutler, M.D., Boston.
   Discussed by
   Drs. Samuel J. Mixter and Henry Jackson, Boston.
3. The Diagnostic Value of Blood Smears in Pertussis. Karlton G. Percy, M.D., Boston.
4. The Indications for the Use of Soda in the Treatment of Disease.
   T. Donald Cunningham, M.D., Boston.

There will also be the usual clinic meeting at the Children's Hospital at 4.30 p.m., to which all members are cordially invited.

Fritz B. Talbot, M.D., *President.*
Lewis W. Hill, M.D., *Secretary.*

Meeting of the Massachusetts Society of Examining Physicians on Tuesday evening, Dec. 14, at 6.30 o'clock, at the Copley Plaza.

Dinner at 7 p.m., $2.00.

Papers:

1. "Functional Psychoses." Dr. Edward B. Lane.
   Discussion opened by Dr. Charles G. Dewey and Dr. A Warren Stearns.
2. "Some Problems of Reconstruction"
   Drs. E. G. Brackett and F. J. Cotton.

W. P. Coues, M.D., *Secretary*

RECENT DEATHS.

Dr. John R. Ham died at his home in Palmer on October 31. Dr. Ham was born in Dover, October 23, 1842. He taught school for a time in the vicinity of Dover before continuing his studies at the Bowdoin and Harvard medical colleges. During the Civil War he was commissioned assistant surgeon of the 115th infantry and was made Medical Purveyor on the staff of Major-General Godfrey Weitzel. He was with the Union forces at Richmond, and later served as regimental surgeon and as post surgeon at Brownsville, Texas, before being mustered out of the service in March, 1886.

Dr. Ham settled at Dover, N. H., where he practised medicine for 38 years.

He was a Fellow of the New Hampshire Medical Society, a member of the State Medical School of Florida, and had served as president of the Dover Medical Society and the Stafford County Medical Society.

Dr. George Morewood Lefferts, a specialist in throat diseases, emeritus professor of the College of Physicians and Surgeons, Columbia University, where he was a member of the faculty from 1874 to 1904, died, on September 21, at the age of 74 years.

Dr. D. P. von Hansemann, professor of pathologic anatomy at Berlin, has died at the age of 62 years.

Dr. Willett Sturgis Connors, a Boston physician, died recently at the Homeopathic Hospital after an illness of two months. Dr. Connors was born 51 years ago in The Range, Queen's County, New Brunswick. He was graduated from the Dartmouth Medical School in 1890, and for a year practised in Brooklyn. The next year he came to Boston, where he practised for 29 years. His widow, Marion C. Connors, two children, Frances Sylvia and Willett Sturgis Connors, Jr., three brothers, and a sister survive him.

Dr. Charles F. Morse, a physician and educator, formerly of Boston and Chelsea, died at Brooklyn, on October 9. He was an instructor in the De Witt Clinton High School in New York City.

Dr. Morse was born in the old North End of Boston on February 23, 1861. After being graduated from the public schools and Harvard College, he taught for several years in the Chauncey Hall School, Copley Square, Boston. He later entered the Harvard Medical School and after receiving his degree he practised medicine in Boston and Chelsea. His appointment to the teaching staff of the De Witt Clinton High School was made about 20 years ago. Those who survive Dr. Morse are his widow, Mrs. Martha A. Morse; a son, Louis S. Morse of Brooklyn; Dr. Morse's mother, Mrs. Julia Locke Morse of West Somerville, and a sister, Miss Julia G. L. Morse of Boston.

Lieutenant-General Sir William Babtie, V.C., of the British Army medical service, died recently while spending a holiday in Belgium. Sir William Babtie served as principal director of the medical services in the Mediterranean during the operations in Gallipoli, Egypt and Saloniki, in 1915-16, and as director, and later inspector, of medical services at the war office. He was in South Africa on the staff of the Natal army and was present at the actions for the relief of Ladysmith and in later operations in Natal and Eastern Transvaal. He was awarded the Victoria Cross in the South African War in 1899. He was born May 7, 1859. He was educated in Glasgow. He was honorary surgeon to the king.

Dr. J. Pierre Morat, formerly professor of physiology at the Lyons medical faculty, has died at the age of 75 years.

Dr. Armand Gautier, professor of biological and medical chemistry in the Paris School of Medicine, and distinguished for his contributions to these subjects, has died at the age of 82 years.

Dr. Walter Sydney Johnson died recently at his home in Los Angeles, California, at the age of 48 years. Dr. Johnson had practiced in Los Angeles for 17 years, and for eight years was senior professor of obstetrics at the College of Physicians and Surgeons. He received his medical degree from the Harvard Medical School in 1898, and then served as surgical interne at the Massachusetts General Hospital, where he later became assistant superintendent. He served also at the Boston Lying-in Hospital. During the World War, Dr. Johnson served as a captain in the Medical Corps, and was stationed at Fort Oglethorpe, Georgia. For several years he was Supervisor of Child Welfare under the City Health Department of Los Angeles. Dr. Johnson is survived by his widow and by two children.

Dr. Chester Manley Barton, a retired Fellow of the Massachusetts Medical Society, died of hypostatic pneumonia and heart disease, at Mittineague, Mass., October 1, 1920, aged 82 years. The son of Chester and Caroline Estes Barton, he was born at Savoy, Mass., December 31, 1837. He was graduated from the University of Vermont College of Medicine in 1868, and settled in West Cummington, Mass., the same year, moving to Worthington in 1870, and to Hatfield in 1872. There he practised until retired in 1906. He was president of the Hampshire District Medical Society in 1883, and was a member of the visiting staff of the Dickinson Hospital in Northampton. He was twice married, first to Clara L. Whitman of Cummington in 1869, and second to Jessie M. Stearns of Conway is 1893. He is survived by an unmarried daughter with whom he lived in Mittineague, and by a son, a chemical engineer.

Dr. Henry Winslow Boutwell died suddenly, November 3, 1920, at his home in Manchester, New Hampshire, aged 72 years. He was a native of Lyndeboro, and was educated in the common schools of his native town and at the Francestown Academy. In 1878 he entered the Harvard Medical School, from which he was graduated in 1882. He then did service in Carney Hospital, South Boston, and later at the Massachusetts General Hospital in Boston.

He settled in Manchester, N. H., where he became a leader in his profession and in the political affairs of the state. He was a member of the New Hampshire Medical Society, and the American Medical Association, and was president of the Sacred Heart Hospital. He was a trustee of the Manchester Public Library and for a long time one of the trustees of the State Industrial School. He belonged to the Derryfield Club and was a thirty-second degree Mason.

Dr. Boutwell had served in the lower branch of the New Hampshire Legislature, in the State Senate, in the Governor's Council, and as a member of the board of control of the management of state institutions.

He was twice married, first to Clara L. Gerrish, who died in 1894. His second wife was Mary Stanton, who survives him.

Dr. Edwin Lewis Drowne of 119 Arlington Street, Brighton, widely known as a specialist on intestinal diseases, died on Oct. 24, 1920, at the New England Baptist Hospital, Roxbury.

Dr. Drowne was born in East Boston 43 years ago, the son of Luther W. Drowne. He was graduated from Harvard Medical School in 1904, and for two years was connected with the Boston City Hospital. From 1906 to 1910 he was resident surgeon at the Haymarket Square Relief Station. He formerly resided at Concord. Dr. Drowne was a member of the Waltham Medical Society. Dr. Drowne practised massage of the abdomen.

He is survived by his mother, Mrs. Abbie F. Drowne of Mount Vernon, N. Y., and by his widow, Mrs. Agnes Marks Drowne, a prominent member of the Brighthelmstone Club of Brighton.

The Boston Medical and Surgical Journal

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THE SYPHILIS CLINIC:

ITS ORGANIZATION, EQUIPMENT AND PERSONNEL.

BY HERMAN GOODMAN, B.S., M.D., NEW YORK CITY.

FOR many centuries, those suffering with the so-called venéreal diseases were looked upon as social lepers. Hospital boards refused to take cognizance of the fact that these people were sick and needed care. Venereal diseases were always the result of wrong doing was their mistaken idea, and "as they sow, so shall they reap," was the general attitude.

Most out-patient dispensaries had a clinic called the Genito-urinary Department and cases of syphilis most often came to it. Gynecological clinics received many patients with infectious syphilitic lesions, but the attending physicians were more interested in the surgical aspects of their specialty. The dermatologists have always been specially interested in syphilis, and the skin clinics have been prepared for the treatment of syphilitic cases.

The impetus given to the social hygiene movement by the late war has made it desirable to outline the organization of a clinic for the ambulatory cases of syphilis.

THE LOCATION OF THE CLINIC.

I am convinced that the best results are obtained if the syphilitic clinic is part of a polyclinic or general dispensary. Many patients may hesitate to enter a special infirmary devoted to syphilis as a needless exposure of their condition. The patient may be ignorant of the syphilitic nature of the malady for which he or she seeks relief, and the various departments of a polyclinic direct such patients to the proper clinic in the same establishment, with more certainty of their going than if the syphilis clinic were an independent unit. (I take into consideration that the ideal condition of having a physician do the admitting at the clinic office is not generally practised.) It is equally desirable for the syphilis department to have the specialists in eye, ear, nerve, and general medicine accessible for consultation, and for special examinations. The dispensary dental clinic coöperation is desirable.

I am equally convinced that the linking of the department of syphilis with the skin department serves best. Because of the multiplex expression of the syphilitic diseases on the skin, the dermatologists have taken the greatest interest in syphilis, and the skin specialists will be the men in the community best equipped for the work.

The overhead expense of superintendent, admission clerks, pharmacy, janitor service, etc., is better borne by a general dispensary than by a single clinic, and the per visit cost is materially reduced. The general clinic will also have beds available for the syphilis department either in an affiliated hospital, or its infirmary.

CLINIC SPACE.

Unfortunately, most dispensaries, and outpatient departments of hospitals are not architecturally constructed with the needs of the syphilis clinic in mind. All too often, the activities of a syphilis department are confined by the physical limitations of the space assigned to it. Naturally, the clinic space should be sufficient for the expected needs of the clinic at its period of expansion, and not for the estimated immediate need, for then there will be no expansion except at the cost of efficiency or removal. Where possible a detached building connected by corridor to the main dispensary entrance should be used, providing it admits of giving more room to the syphilis clinic at some later date. This may be arranged, for example, by having an upper story in such a building used temporarily for some other purpose.

The syphilis clinic should have a waiting room. Separate waiting rooms for men and women are desirable; separation of white and black is not essential in most localities. The desk of the department's clerk may well be located in the waiting room. The clinic rooms should, if possible, be arranged about the waiting room.

There should be separate, but connecting rooms for (1) the social service, and (2) appointment office (which may also be used for the records and storage of supplies); (3) another room for the clinical examination of the patients which should have several undressing cubicles; (4) a separate room for the dark field examinations, in which room the blood for Wassermann may also be drawn and the urine examined. There should be (5) a dental outfit exclusively for syphilitic patients, (6) a room for the injection of salvarsan, and for mercury; and (7) an infirmary for the spinal puncture cases, which has a small kitchenette equipment.

As the need for room came, the infirmary could be removed to the second story immediately above the clinic, and the space utilized for another salvarsan injecting room, x-ray, photographic room, office of the director, syphilis department dental office, etc.

Of course, one room may serve in a small clinic for Wassermann, salvarsan, and mercury injection. The infirmary may be replaced by an assignment of beds in the affiliated hospital. The pharmacy is that of the general dispensary.

If the syphilis department is to be used at night, and the other clinics are not open evenings, it is especially desirable to plan the location of the clinic so that the patients do not have to pass through other clinic rooms, innumerable halls, etc.

Lavatories should be provided with sanitary paper seats.

CLINIC HOURS.

The syphilis clinic should be open during the other hours of the dispensary, and in addition, at least three evenings each week for those whose absence from work during the day would jeopardize any position they might have, and yet whose earnings do not enable them to pay the cost of modern syphilitic treatment with a private physician.

CLINIC PATIENTS.

I believe that every patient who applies to a clinic for treatment should be admitted. The laws in many states licensing clinics also restrict them to the deserving poor. It is difficult today with the ever increasing cost of necessities to define the "deserving poor," and certainly in the case of syphilitic patients the clinic is in an especial relation because of the public health bearing of early and persistent treatment which may be beyond the financial reach of many people who for minor ailments would ordinarily consult a private physician, or be referred to a specialist. Many estimates have been made of the abuse of clinics by patients able to afford other treatment, and the average of about two to three per cent. found as such does not warrant the rigid cross-examination applied at some clinics.

CLINIC FEE.

The initial fee at the dispensary should be at least double if not five times the cost of the second and subsequent visits. This is the logical method to suppress the vicious habit that some patients have of floating from one clinic to another. Every clinic should, however, be so constituted that if the patient states he is unable to pay, this larger fee be remitted, or loaned to the patient. A standard fee of twenty-five cents for the dispensary is moderate, but ten cents is still charged by many dispensaries despite the heavier cost of service, and it is estimated that fifty cents comes nearer to the cost per visit than twenty-five.

All except the needy patient should pay for medication. Arsphenamine (salvarsan) is now sold to dispensaries at a price low enough to enable the clinic to inject doses of this drug at about two dollars a treatment, and still have a surplus to give free treatments from the arsphenamine (salvarsan) fund. Mercury injections should cost about twenty cents. Medicine received on prescription at the central pharmacy is sold at regular dispensary rates.

The advisability of the "pay clinic" especially for the evening syphilis clinic should be seriously considered. There are many patients, working by day, who can ill afford to lose a day's or half day's work, and yet are not earning enough to pay for competent private treatment. They are willing to pay what they can afford, which is something above the immediate cost of the treatment to the clinic. Such patients may be treated at the night clinic, paying one dollar for the admission, and five dollars for the arsphenamine (salvarsan). The profit from such a clinic is usually divided between the clinic's contingency fund, and the doctors constituting the staff.

The provisions of the United States Public Health Service, State and Municipal health departments for distribution of free arsphenamine (salvarsan) and other aids in the treatment of syphilis should be reviewed by the managers of the prospective clinic as they differ in various states, according to the financial grant which each state adds to the money allotted to it. The Interdepartmental Social Hygiene Board should also be consulted as to possibilities of monetary and other aid. It is rarely possible for a clinic to be self-supporting. A clinic should be endowed or assured of some outside source of revenue.

MEDICAL PERSONNEL.

The syphilis clinic should have as its director a man well trained in the intricacies of general medicine, in addition to being a good dermatologist, with some knowledge of serology. He should be interested in the prevention of syphilis, hence skilled in the technic of modern bacteriological diagnosis, and familiar with the biology of the causative organism. He should be adept in the niceties of intravenous and intraspinous therapy. Almost every community large enough to support a syphilis clinic has such a man.

Associated with the director, should be at least two assistants, who may serve on alternate days as chief of clinic if the organization warrants it. These may be younger men, anxious to learn. The presence of an associate stimulates keenness of observation, curtails sloppiness, improves technic, and trains a man to maintain the clinic in the absence of the director.

The system of rapid rotation of attending physicians, where these are available, cannot be too strongly condemned. Two services at most may run throughout the year; one, Monday, Wednesday, Friday and the other Tuesday, Thursday, Saturday. The men on night clinic are selected from those attending both clinics. The director should have supervision over the entire service.

Consultants for eye, nerve and medical diagnosis should be attached to the syphilis clinic, or subject to call if in a polyclinic.

NURSING.

A full-time nurse is essential. She aids in the examination of the female patients, does the sterilizing and in due time becomes expert in the taking of blood samples. Some clinics during the war shortage of physicians have trained nurses to administer mercury to women, and to administer arsphenamine (salvarsan). I do not advise these last procedures, on the medicolegal involvement, alone.

SOCIAL SERVICE.

A trained worker in this field is a desirable adjunct to the clinic. In the small clinic, the nurse may combine the two functions. The mistake of perverting the social service into a financial rating bureau should not be made. The volunteer worker in social service in the syphilis clinic is not desirable.

CLERKS.

A cheerful, interested, and friendly clerk, who knows the alphabet and how to file cards properly is a boon to the clinic. Any other kind is useless.

RECORDS.

The syphilis clinic should keep its own file, and if in a general clinic, this may be a duplicate file. This facilitates study by the doctors, and is a check against records "lost" in the general office, or cards carried away by the patients.*

ADVICE TO PATIENTS.

Each patient receives on his first visit a sheet of instructions, with directions to read it carefully or to have it read to him. Such a sheet should not preach a lengthy sermon on morality, as some examples of this type of literature do, nor should it be pessimistic as to possibilities of ultimate and complete eradication of the disease. The following is taken from the best example of this kind I have ever seen. It was issued by the Society of the New York Hospital.

INSTRUCTIONS FOR THOSE HAVING SYPHILIS.

(Lues, Pox, Blood disease.)

Syphilis is a treacherous and dangerous disease of the entire system and requires for perfect cure at least two, better still, three years of faithful treatment, because it is "in the blood." Healing the chancre and taking medicine for *a few weeks or months* will not cure your blood of the syphilitic poison. It is, therefore, necessary that you follow the doctor's orders most carefully. If you do not, you are in danger of having the disease appear in the future in some important part of the body like the brain, spinal cord, bones, arteries or other organs, as the liver. If you do not follow directions it is possible that your wife and children will acquire the disease from you.

The following directions are of particular importance during the first year and whenever, if you neglect yourself, the symptoms break out again.

Intoxicating liquors in all forms must not be taken, because alcohol is a poison which added to the poison of the syphilis, makes the syphilis much less likely of perfect cure.

Do not smoke or chew tobacco, because the irritation of the tobacco increases the severity and duration of the mouth sores of syphilis. Sour, acid, peppery and spicy foods and pickles should be avoided for the same reason.

Brush your teeth and wash your mouth every night and morning. Cleanliness of teeth and mouth decreases the severity and duration of the mouth sores of syphilis.

Allow no one else to use your tooth brush.

Have a dentist treat your teeth if they are bad. Tell him at the first visit that you have syphilis, so that he may take precautions against catching the disease himself and giving it to other patients.

To prevent giving the disease to your family, friends, and associates, observe the following rules strictly:

Always sleep alone.

Always use only your own toilet articles, such as towels, brushes, combs, shaving brushes, razors, soaps, etc.

Always avoid kissing anyone, especially children.

Sexual intercourse must not be had during the first year, and during any fresh outbreak after neglect of treatment, because you are then certain to give the disease to the woman.

Always burn dressings which have been on open sores or wounds.

If you disobey these directions you will certainly give the disease to innocent persons.

You should always tell any doctor who is treating you for any other disease in the future that you have had syphilis, because this fact often alters the treatment of the disease. It will therefore be entirely to your own benefit for the doctor to know about your syphilis.

PERSONAL TOUCH.

In addition, the director or one of his staff, speaks to the patient and tries to convey the necessity of immediate and continuous treatment. He points out in the clinic waiting room, one of the gray haired patients, and advises the new arrival to go over and talk to one who had neglected treatment fifteen years ago. These older men go into the details of their case, and dilate on the important fact that they had felt entirely well until recently, when the disease came back! Some patients deem syphilis a death sentence. They speak of the uselessness of therapy, and threaten suicide. To these, the doctor is cheerful of the outlook, and promises cure if the patient comes as often and as long as asked. I consider it of prime importance that this task not be delegated to anyone by the director or chief of clinic. A few moments spent in this way keeps the patient off the "one visit" list. Incidentally, whenever a syphilis clinic is inclined to get that feeling of "this is the best in the country," it should prepare its "one visit" list.

---

* About five per cent. of the records in clinics where the patient carries his history back and forth from the office are lost by this form of clinic abuse. It can readily be remedied by having pages carry the history to the clinic from the office, etc.

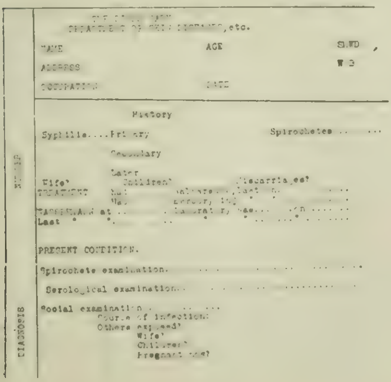
FOLLOW-UP.

I think that I have indicated above that a system of "take-up" is superior to follow-up. Every failure to attend the clinic can not be followed up, because a proportion of the patients give false names and false addresses. This proportion is smaller in the general dispensary, than in one devoted solely to syphilis, for evident reasons.

A small group of patients come to the clinic who are transients. They give a boarding-house as an address, or some ship. Some patients will come to the clinic to have the diagnosis of a private doctor confirmed, and being assured that they really have syphilis, report back to the doctor. I have already mentioned the group that carry the history card bearing the diagnosis away from the clinic. There will also be a number of patients under treatment by private physicians who come to the clinic for the Wassermann test, or for arsphenamine (salvarsan) injections, who are not able to pay their physicians for these services, but who do pay for mercury injections, for example.

If the syphilis clinic wishes to maintain a follow-up system, it should engage a full time trained worker in this field. The habit of sending postal cards to those failing to attend is pernicious, if not criminal. If the mails are to be used, first-class sealed letters only should be sent, and a non-committal return address, or a postoffice box number, used. I do not wish to under-rate the work the follow-up nurse does accomplish, but I do wish to emphasize the fact that the ideal time for attack is when the patient is at the clinic, and that the proper person to convince the patient is the doctor.

A


[illegible]
[illegible],etc.
NAME AGE S.M.W.D
ADDRESS W B
OCCUPATION DATE

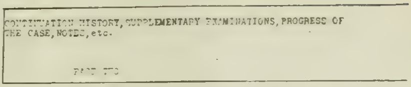
History

Syphilis....Primary Spirochetes ..
Secondary
Later
Wife? Children? Miscarriages?
TREATMENT Had [illegible] salvarsan ?, last [illegible]
Had mercury, [illegible]
WASSERMANN at .. laboratory, was...
Last

PRESENT CONDITION.

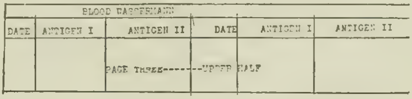
Spirochete examination.
Serological examination..
Social examination ..
Source of infection:
Others exposed?
Wife?
Children?
Pregnant now?

B


CONTINUATION HISTORY, SUPPLEMENTARY EXAMINATIONS, PROGRESS OF THE CASE, NOTES, etc.

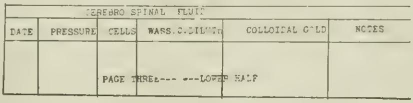
PAGE TWO

C



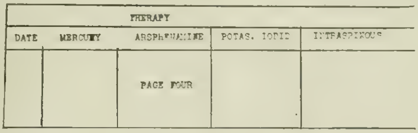
BLOOD WASSERMANN					
DATE	ANTIGEN I	ANTIGEN II	DATE	ANTIGEN I	ANTIGEN II
		PAGE THREE------	--UPPER HALF		

D



CEREBRO SPINAL FLUID					
DATE	PRESSURE	CELLS	WASS.C.DILUTN	COLLOIDAL GOLD	NOTES
		PAGE THREE---	---LOWER HALF		

E



THERAPY				
DATE	MERCURY	ARSPHENAMINE	POTAS. IODID	INTRASPINOUS
		PAGE FOUR		

A SUGGESTED HISTORY FORM FOR THE SYPHILIS CLINIC.

A folded sheet 14x10 to make four pages does exceptionally well.

EQUIPMENT AND SUPPLIES

For Syphilis Clinic Proper: Renewed as Required.

Acid aceticum, ½ lb. in bottle	Botts.	1
Acid hydrochloricum, ½ lb. in bottle	Botts.	1
Acid nitricum, ½ lb. in bottle	Botts.	1
Adrenaline chloride, 1 mgm. tablets, 20 in tube	Tubes	5
Aether, ¼ lb. in tins	Tins	5
Aethylis chloride, 3 oz. in tube	Tubes	5
Alcohol, 5 gallons in bottle	Botts.	1
Collodium, 1 oz. in bottle	Botts.	1
Glycerinum, 1 lb. in bottle	Botts.	1
Hydrargyri chloridum corrosive tablets, 250 in bottle	Botts.	1
Hydrargyri chloridum corrosive, 3 oz. in bottle	Botts.	1
Hydrargyri salicylas, 1 oz. in bottle	Botts.	6
Iodum, 1 oz. in bottle	Botts.	1
Normal saline tablets in bottle	Botts.	3
Oleum ricini, 1 qt. in bottle	Botts.	1
Petrolatum, 3 lb. tins	Tins	1
Petrolatum liquidum, 1 lb. in bottle	Botts.	2
Phenol, ½ lb. in bottle	Botts.	1
Potassii iodidi, ½ lb. in bottle	Botts.	1
Salvarsan (arsphenamine)	as required	
Sapo mollis, 1 lb. in bottle	Botts.	6
Sodii hydroxidi sticks	Botts.	1
Spiritus ammoniae aromaticus	Botts.	1
Talcum, 2 lbs. in tins	Tins	1
Thymol iodidum (Aristol) 1 oz. in bottle	Botts.	1
Unguentum hydrargyri, ½ lb. in bottle	Botts.	2
Unguentum hydrargyri chloridi mitis	Botts.	2

STATIONERY.

Baskets, letter	No.	3
Baskets, waste	No.	1
Blotters, hand	No.	12
Books, blank, crown cap, 250 pages	No.	2
Cards for filing		as required
Envelopes with return address of clinic	No.	250
Envelopes with return address but no name	No.	250
Erasers, rubber pencil	No.	3
Erasers, typewriter	No.	1
Forms, blank		as required
Ink, black	Botts.	1
Ink, red	Botts.	1
Inkstands	No.	2
Labels for vials, *Poison*, etc.	Gross	1
Pads, ink for stamps	No.	3
Paper, carbon	Box	1
Paper fasteners	Box	1
Paper, typewriting	Pks.	1
Paper, typewriting copy	Pks.	1
Paste, library	Jars	1
Pencils, lead	No.	12
Pen holders	No.	12
Pens, steel	Gross	1
Rubber stamps		as required
Rulers	No.	1

MISCELLANEOUS SUPPLIES.

Bandages, gauze, assorted widths	No.	36
Basins for sponges, etc. White enamel	No.	2
Basins, hand. White enamel	No.	2
Boilers, instrument, 9 x 18 x 4 inches (arranged with gas or electricity.)	No.	1
Buckets, metal, with cover	No.	2
Cabinets, large, for instruments, dressings, etc.	No.	1
Cabinets, filing		as required
Chairs, common		as required
Corkscrew	No.	1
Cotton, absorbent, in roll		as required
Desks, office	No.	2
Funnels, glass, 25 c.c.	No.	3
Gauze, plain		as required
Gloves, rubber, sizes 7, 8, and 8½		as required
Graduates, glass, 10, 100, 250 c.c. aa.	No.	1
Hones, Arkansas	No.	1
Irrigators, stand for	No.	1
Jars, for dressings, large	No.	1
Lamp, spirit, glass	No.	1
Medicine droppers	Doz.	1
Plaster, adhesive	Spools	6
Pus basins	No.	3
Scissors, bandage	No.	1
Shakers, salt (for powders)	No.	2
Shears	No.	1
Sheeting, rubber	Yds.	6
Soap, Ivory	Cakes	72
Tables, instrument	No.	1
Tables, operating, built as required of wood.		
Tables, typewriting	No.	1
Tongue depressors, wood	Gross	6
Tourniquets, rubber (use old rubber tubing from salvarsan)		
Trays, instrument, white enamel	No.	1
Tubing, glass assorted	Lbs.	1
Tubing, rubber, for salvarsan special		as required
Typewriters (characters +, ÷, & medical)	No.	1

LABORATORY.

I consider that the syphilis clinic will not attempt to do its Wassermann tests or colloidal gold tests, in the beginning at least, but will utilize the city health department laboratory, a central laboratory of the dispensary or affiliated hospital, or a commercial laboratory (only as a last resort, because of the expense to the patient).

Apparatus, distilling, complete	No.	1
Beakers, glass	No.	6
Bottles, dropping for cedar oil	No.	1
Brushes, test tube	No.	3
Burners, Bunsen	No.	1
Centrifuge	No.	1
Covers, glass	No.	1
Flasks, Erlenmeyer, 250, 500, 1000 c.c. aa.	No.	3
Gauze wire, iron	Pieces	4
Hemocytometer	No.	1
Jars, staining Coplin	No.	3
Labels, microscope	Books	1
Microscope	No.	1
Microscope and dark field condenser, complete	No.	1
Paper, litmus, blue and red, aa.	Vials	1
Pencils, wax, red	No.	1
Slides, glass, extra thin for dark field	Doz.	6
Stop cock for rubber tubing	No.	3
Test glasses, footed urinary	No.	6
Test tubes	No.	36
Test tubes, stand for	No.	1
Urinometers	No.	1
Wire, platinum, heavy	No.	1
Xylol	Botts.	1
Stains, Giemsa India Ink (Chin-chin)		
Reagents, Benedict's solution, etc.		

ADMINISTRATION OF MERCURY AND SALVARSAN.

Mixing cylinders with glass stoppers	No. as required
Gravity tubes, 250 c.c., outlet at bottom, pinch cock, needle connection, glass window	No. as required
Gravity tubes for spinal therapy	No. as required
Needles, Fordyce	No. as required
Needles, Spinal	No. as required
Hypodermic syringes, 2 c.c. and needles	No. as required
Hypodermic syringes, 30 c.c.	No. as required

INFIRMARY.

Beds, linen, chairs, etc., etc., for infirmary as for ward elsewhere.

KITCHENETTE.

Preparation of light diets for patients. Luncheon for night nurse.

COÖPERATION OF DOCTORS.

In some communities there may be an unfortunate and ill-advised opposition on the part of certain medical practitioners against a proposed syphilis clinic. Prior to establishing a clinic in such a community I had the Commissioner of Health send out to the registered doctors the following form. I may say here that the replies were such that there could never be any complaint from the doctors that the clinic was depriving them of their means of livelihood.

REPORT OF VENEREAL DISEASE FROM CIVILIAN PHYSICIAN.

1. How many cases of venereal disease have you treated in the last
    year? ....
    month? ....
2. Do you think the number is increasing? ....
3. How many cases have you treated in the last year
    of gonorrhea? ....
    of syphilis? ....
    of chancroid? ....
4. How often have you had the body discharges examined for gonococci in the last month? ....
5. How many Wassermann reactions have you had performed on your patients in the last month? ...
6. How often has the dark field or other diagnostic method for the demonstration of the Spirocheta pallida been used in the last month? ....

7. How many Salvarsan or Neosalvarsan or their substitutes have you administered
   in the last month? ....
   in the last year? ....
8. Are these answers from your office record or from memory? ....

I hope at a later date to present the subject of the hospitalization of the syphilitic, and a consideration similar to this, on the syphilis department of the in-hospital.

◆

TINEA CAPITIS—ROENTGEN RAY TREATMENT.

By C. Guy Lane, M.D., Boston,

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In reviewing the work on the treatment of tinea capitis by the roentgen ray it is possible to recognize four distinct stages, or, perhaps better, the four contributions to medical science which have made this modern treatment possible. In the first place, naturally, was the discovery in 1895 of the rays now bearing the name of the discoverer. Secondly came the application of this discovery to the treatment of ringworm of the scalp by Sabouraud in 1904, although it had been first suggested by Freund in 1897. In this period was the development of technic by Kienbock, Adamson and others. The third step was the perfection of apparatus, especially the development of the interrupterless transformer by Snook in 1908, and the announcement of the Coolidge tube in 1914. More recent is the work of Shearer of Cornell on the physics of the Roentgen ray, and the practical application of his work to the treatment of ringworm and other diseases by MacKee, Remer and Witherbee, and Hazen, by the simplification of technic and standardization of apparatus.

In the treatment of ringworm of the scalp in the past, the prognosis given by various authorities varies from an indefinite number of months to a year or longer. The chief drawback to treatment by the older methods over this length of time is the fact that it offers a great opportunity for the infection of other children at schools, at play, at home, etc.; it offers a chance for a larger portion of the scalp to become infected; it offers a chance for adults to become infected, for there are a certain number of infections of the glabrous skin derived from this source. Again, such treatment is often intermittent, is not carried out carefully or thoroughly, is stopped before the disease is eradicated, with the possibility of fresh recurrence. Thus the older forms of treatment, as a whole, can be summed up as unsatisfactory. It is true that the disease disappears spontaneously at puberty, but during all this time there has been the risk of consequent infection of others, the loss to the child because of the exclusion from school, and the general unsightliness or even loathsomeness to the laity.

The more modern treatment of tinea with roentgen ray was elaborated by Sabouraud and Noire in 1909, and has been used with marked success since that time, particularly in France and England. The result which this treatment produces is not based on the fact that the tinea organism, the mycelium and the spores of the trichophyton, are affected by the roentgen ray. This is not the case. The organisms are unaffected, but the ray does cause a loosening of the hair-shaft so that in fifteen to eighteen days after exposure the hair falls out. Thus it removes the old infected hairs *in toto* with their myriads of spores and mycelia; it removes the nourishment and thus the possible source of the future growth of the organism by removing the greater part of the rest of the hair; it also permits, because of the fact that the follicles are unoccupied, an antiparasitic application to be used on the scalp with a better chance of killing off the remaining organisms in the follicles, thus increasing greatly the chances of a permanent cure in a comparatively short time. It is uncertain whether, in addition to the epilating effect, the roentgen ray produces a tissue change which renders the soil unfavorable for the existence of the parasite.

Sabouraud's technic has survived in general, but newer and more powerful apparatus has been devised, and especially apparatus with which it is possible to produce and to control properly the required current, not once, but at will, and to measure this far more accurately. In modern technic it is possible to use, in measuring the dose, certain fixed factors which produce as accurate results as the method of using a color change in pastilles, the Holzknecht or the Hampson method, for instance. This method of color change measurement depends on the effect of the roentgen ray on certain chemicals and presents the possibility for a considerable percentage of error, and, since the use of the more accurate methods developed in recent years, particularly by MacKee, can practically be discarded at the present time.

With the perfection of the Coolidge tube the last of the four necessary constant factors to obtain a definite dose at will has been obtained. These constant factors are: (1) the intensity of the current as measured by the voltage or the spark gap; (2) the number of milliamperes through the Coolidge tube; (3) the distance of the affected part from the tungsten target; (4) the time of exposure. The Coolidge tube makes it possible by control of the amount of the current passing through the filament to regulate absolutely the intensity of the current produced, with an accuracy impossible of attainment with the gas tube. This means that by using the same spark gap, the same number of milliamperes, the same distance, and the same time at one exposure it is possible to produce the same amount of rays at will and the same result by using these same factors at any later time. It is, therefore, not necessary to measure the roentgen ray given off at each of these exposures. Enough experimental work has been done to prove that with the same four constant factors, the same results can be obtained clinically.

With any given transformer, it is advisable and really necessary to standardize this particular piece of apparatus. It is necessary first to determine three factors which one intends to use: the spark gap, the milliamperage, and the distance. The usual distance which is used in these cases is eight inches. The matter of a spark gap and milliamperage is more a matter of individual choice within certain limits. A current of sufficient intensity to produce a six or seven-inch back-up spark is ample for the purpose, and a low milliamperage has been proved sufficient. Let us take, for example, a six-inch spark gap with a current of three milliamperes passing through the Coolidge tube. It is necessary that these factors should all be accurate and that the apparatus should be in good condition. The line voltage, of course, should be constant. It is necessary that the spark gap should be six inches; that is, that the rheostat lever should be on the button which just produces a spark across a gap measuring six inches when a current of three milliamperes is passing through the tube. Moreover, it is necessary that this current measuring three milliamperes be measured by a milliampere meter which is accurate, that is, one which has been recently checked up or tested and made accurate.

A six-inch spark gap may need further definition. I mean that with a distance of exactly six inches between point electrodes, and the switch closed, and the current at three milliamperes, there should be a spark jumping occasionally. A little closer approach of the points, or a bit more current, will, of course, make a continuous stream of sparks, and widening the spark gap or decreasing the current will prevent altogether the sparking. Having thus accurately measured the spark gap with three milliamperes through the tube, it is necessary to decide the fourth factor,—time. In the first place, this can be done theoretically according to the formula which has been recently described by MacKee, and Remer and Witherbee, based on work done by Professor Shearer of Cornell. The formula developed and established by them is as follows:

$$\frac{\overset{\text{mil-amp.}}{\text{(current)}} \times \overset{\text{spark gap.}}{\text{(voltage)}} \times \text{time}}{\text{distance}^2} = \text{intensity at the surface}$$

The mathematical equivalent of this formula, as determined by them, without the detail of proving this conclusion, is:

$$\frac{36}{64} = 1 \text{ skin unit}$$

This is their standard formula for unfiltered dosage. The skin unit is further explained by MacKee to be the "amount necessary to epilate scalp hair without erythema (epilating dose), or the amount necessary to provoke a slight erythema on a very sensitive part, as the face of a young girl." It is equivalent to one unit on the Holzknecht scale at skin distance or four on the Hampson. In order to find the time for one skin unit, using the figures already determined upon, namely, distance of eight inches, spark gap of six inches, milliamperage of three, these figures are substituted in the above formula as follows:

$$\frac{3 \times 6 \times T \text{ (time in minutes)}}{8 \times 8} = \text{one skin unit} = \frac{36}{64}$$

$$\frac{3 \times 3 \times T}{32} = \frac{9T}{32} = \frac{36}{64}$$

$$9T = 18$$
$$T = 2$$

Thus the theoretical time necessary for one skin unit with the chosen factors is found to be two minutes.

Secondly, the practical determination of the time factor is done biologically. The work of MacKee, Remer and Witherbee, however, indicates that an arithmetical method can be applied with safety to any interrupterless transformer of the closed magnetic circuit type used with a Coolidge tube. In checking this factor, it is best to use a small area of skin on the flexor aspect of the forearm of a young and preferably blond female. A blond skin and skin in this region is more sensitive, and thus it is better from the point of view of safety to standardize our erythema dose on skin of this type rather than on a more resistant area or individual. Small areas, 2 or 3 mm. in diameter, can be exposed for one, one and a half, two minutes, etc., and observed for sufficient time, with the idea of establishing the time necessary to produce a faint erythema. Enough comparison of the two methods has been made to warrant the statement that with these factors the biologic measurement will check up with the theoretical one and that the time of two minutes will cause a faint erythema and likewise an epilation. Thus there are available for use the factors necessary for the production of one skin unit at will, and with these factors one is safe in attempting an epilation. Experience has proved that it is perfectly safe to administer one and one-quarter (1¼) skin units to the scalp, that is, that epilation will result from this dose and that the hair will regrow after the epilation has been completed without leaving any after effects on the scalp. Therefore a dose of one (1) to one and a quarter (1¼) skin units is advisable for epilation, but no more.

Another check can be applied to these factors by employing them first in the treatment of a marginal ringworm or to one small infected area and using the time of two minutes with the other factors as mentioned above. This is a good plan to check still further the apparatus before attempting a complete epilation according to the technic which will be described later on. As has been stated by Hazen, "it is not necessary that every hair be epilated, for the falling of the diseased hairs and the majority of the others is sufficient to effect a cure, provided the scalp is kept covered with an anti-parasitic preparation."

In the preparation of the patient, there are certain points to be observed. At the Massachusetts General Hospital a printed form has been prepared embodying the requirements to be followed by the parents who are to bring children with tinea for epilation. These directions emphasize the contagiousness of the disease, advise the use of cloth caps, and forbid the employment of irritants on the scalp for a week before treatment. They advocate the clipping or shaving of the head the day before the exposure to the roentgen ray, and outline the after-care, leaving a space to insert the date for return for observation. It is felt that all these details are necessary in order to produce the best results. When the child is brought for treatment the head is inspected for evidences of the application of an irritant, iodine, sulphur, etc., and inquiry is made to be sure that no such application has been used, in order to postpone the treatment, if such has been the case, and avoid the possibility of a resulting dermatitis.

The scalp is then measured in accordance with the Kienbock-Adamson method, which provides for the exposure of each of five points on the scalp to one skin unit of the rays, the overlapping of the rays being so distributed that every point on the scalp receives the same amount—one (1) skin unit. With indelible pencil or red ink a line is drawn over the vertex of the scalp in the median line from the anterior hair margin to the posterior hair margin. The middle point of this distance is measured and marked on this line. Two other marks are made on this line, one five inches anterior and one five inches posterior to this center mark. On both sides of the scalp above each ear and five inches distant from each of the three points on the median line are placed two other marks, making five points which have been marked on the scalp, all of which are five inches from each other, except the most anterior and posterior points, which are ten inches apart. Each lateral point is connected with the three points on the middle line, with a straight line.

In the actual process of exposing the scalp to the roentgen ray, careful attention to various details must be paid in order to secure the proper result and also to prevent untoward effects, notably a permanent alopecia. It is not possible to emphasize too much the accuracy of the various factors which have been mentioned. They should be actually measured or verified and not estimated or guessed at.

Each of these five points is exposed in turn, and a routine order of the exposures is advisable in order to avoid the possibility of exposing the same area twice. It is necessary that with the exposure of each point the tungsten target be exactly eight inches from the point and in the line of a perpendicular erected to any imaginary tangents drawn at that point. It is further necessary that the axis of the tube be parallel to a tangent. It will be found that the lines which have been drawn between the various points on the scalp will be of appreciable aid in determining the position of the tube at each exposure.

The treatment of the scalp is best carried out with the individual lying down on a wooden table with the head slightly elevated on a pillow. For exposure of the lateral points, the head is turned far over on one side and then on the other. The ears should be bent forward and held with a piece of adhesive plaster across the face, and the ears, face, neck, and shoulders should be covered with lead reaching to the hair margin. For the exposure of the most anterior point, the head rests on the occiput, tipped slightly forward, and the forehead and face must be covered in the same way with lead. For the exposure of the most posterior point, place the individual face downward, with the head bent forward and the chin against the chest so that the forehead rests on the table. In this position the neck and ears and back should be protected. For the exposure of the middle point of all, with the individual lying face downward, the head is tipped up so that the chin rests on the pillow. In this position it is advisable to cover the shoulders and possibly the ears. For the exposure of the last point, it is sometimes possible to prop the child up on pillows or sandbags and to hold the head far enough forward to obtain a proper exposure of this area with the child in the dorsal position. During each exposure, it is important, of course, that the child keep absolutely still in order to avoid the overlapping of exposures. It is seldom advisable to attempt the exposure of a child under four years except possibly for a single lesion, and then only under favorable circumstances. It is also advisable to see that the child's hands and arms are covered with a sheet of leaded rubber to reduce the possibility of his putting his hands within reach of the high tension current.

Again let me emphasize the necessity for making sure that the distance between the target and the scalp is eight inches, not eight inches and a quarter, or seven and three-quarter inches. The value of this method of treatment and its good results are due in a large measure to the accuracy with which all factors are used. Exposure of each area should be in accordance with the factors which have been found correct for the apparatus which is being used, although I feel that the figures used above will be found to be applicable, as MacKee has stated, to the use of any modern interrupterless machine of the closed magnetic circuit type, using a Coolidge tube.

Following the treatment the mother is advised to provide the child with cloth caps to be worn underneath the regular head covering, these to be changed and boiled daily, and to wash the scalp daily with castile soap and water. At the end of a week an anti-parasitic ointment, usually consisting of carbolic acid, sulphur, naphthol, in lard, is started and its application daily is continued unless there is any inflammatory reaction. The hair begins to fall out in about fourteen or fifteen days and continues for about a week, during which time scaly, slightly inflammatory patches of ringworm clear up and leave smooth, shiny, possibly slightly red areas. Regrowth starts in the course of four to six weeks and there should be no signs of reinfection provided the treatment has been carried out thoroughly. The use of a mild anti-parasitic ointment should be kept up during all this time with the idea of preventing reinfection and also to stimulate the regrowth of the hair. Of course, the old head coverings should be destroyed after the hair has fallen out, as another measure of prevention.

Roentgen ray treatment as used today, with proper precaution, in skilled hands, offers practically no risks, Hazen's statistics published in 1919 showing only two cases out of 225 treated which have any permanent alopecia, one due to the clock stopping during an exposure and the other to the moving of a patient so that certain of the areas overlapped. Sequeira states that there have been 800 cases a year treated at the London Hospital for some years past with most satisfactory results. Clinical experience has proved that there is no fear of injury to the brain from exposure to the ray. A number of cases were analyzed by Macleod in 1909 for possible cerebral injury.

In conclusion it may be stated that exposure to the roentgen ray offers the best opportunity for the quickest permanent cure of ringworm of the scalp with practically absolute safety, providing attention is paid to details in connection with not only the preparation, the actual exposure, and the after-care of the scalp, but also with the standardization and manipulation of apparatus.

Bibliography.

Macleod: Lancet, May 15, 1909.
Mackee and Remer: Med. Rec., Aug. 7, 1915.
Shearer: Am. Jour. Roentgenol., December, 1915; *Ibid.*, June, 1916.
MacKee: Jour. A. M. A., Nov. 27, 1915.
Remer and Witherbee: Am. Jour. Roentgenol., June, 1917.
Hazen: Jour. of Cutan. Dis., May, 1919.
Witherbee and Remer: Arch. Dermat. and Syph., May, 1920.
MacKee: Jour. of Cutan. Dis., December, 1919.

OBSERVATIONS ON THE SIGNIFICANCE OF FUNCTIONAL ALBUMINURIA IN YOUNG MEN AT HARVARD UNIVERSITY.

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In the literature, albuminuria, without readily demonstrable cause, has been variously termed, "physiological," "postural," "orthostatic," "transitory," etc. These terms apparently were attempts to explain the occurrence of albuminuria in young adults, where no organic cause could be found.

Osler[1] speaks of functional albuminuria being influenced by posture. He also says that it may be present only during active hours, and further, that the interpretation of albuminuria as a symptom depends largely on the views we hold about idiosyncrasies as distinguished from those we hold about disease. Special interest attaches to albuminuria as associated with various nervous disturbances, the reason for which is rather obscure. It has been noted that albumen appears in the urine after apoplectic fits. Albuminuria can be induced in healthy subjects by violent exercise.[2] Holst[3] in Christiania in 1915, reported a case of a youth of sixteen who had so-called orthostatic albuminuria for five or six years. The patient later developed tuberculosis from which he died. The kidneys at post-mortem showed nothing. Holtz also reports other cases of orthostatic albuminuria with no organic defects. Further justifying the designation of functional for this type of albuminuria, others have found albumen present in the urine of children ranging in age from eighteen months to fourteen years, and could not relate it to any organic disease by various laboratory and clinical tests. Yet the cases did not correspond to the requirements for postural or for orthostatic albuminuria. It was believed that there was no significance in the appearance of this albumen. Jeanneret states[4] that this symptom may best be called "postural" albuminuria, as neither the orthostatic nor the lordotic attitude ever induces it except in the predisposed. Rollier's treatment of Pott's disease has been borne without production of albuminuria, and Jeanneret asserts that the examination of numerous children who had lordosis alone has shown no albuminuria, unless the lordosis was supplemented by an erect position and immobility. He arrived at the conclusion that moderate exercise checks the albuminuria.

Nicholson[5] in a study of school boys in England states that albumen was present in the urine of 10% of these boys after playing football, and of 18% after a three-mile run, but that each test seemed to have picked out a different set of subjects. He was unable to discover any relation to diet, or to the height of the systolic blood pressure.

Albuminuria has been associated variously with posture, with nervous disturbances, with erect immobility, and with particularly vigorous bodily activity. That this functional albuminuria predisposes to nephritis is a question open to proof and much theorizing. No very good evidence in support of this has been brought forward. In fact Barringer[6] stated that ten to eleven years after the examination of some seventy men who originally had albumen, forty per cent. still showed it. None of this forty per cent. had nephritis or symptoms thereof. He concludes from this and from some further investigations that it is exceptional for this type of albuminuria to be a symptom of incipient nephritis. He regards the albumen as an evidence of generally lowered resistance, and this would seem to agree with our findings in young adults at Harvard University.

The examination of Harvard freshmen during four previous years showed that five to seven per cent. had albumen in the urine on a single examination.[8] These urine examinations were made at varying times between 10 A.M. and 6 P.M. The nitric acid test was used with unfiltered urine and a definite "ring" only was considered positive. Doubtful tests were regarded as negative. Sediments were done on all positive urines. During this last college year, 1919-20, 513 freshmen in Harvard University of an average age of 18 were examined. Forty or approximately 8%, showed albumen. The examination of the sediment in all cases, showed nothing more than an occasional cylindroid or a few squamous cells. It was thought that further examination of the 8% showing albuminuria might help to classify these men according to the present standards of postural, orthostatic, transitory, or so-called purely functional types. Of these forty men, six were excluded as having organic heart lesions which might account for their albuminuria. In the second examination some weeks following, sixteen of these thirty-four still persisted in showing albumen. In the third examination two weeks later six of the thirty-four still showed albumen. The sediment of the final six showed nothing with the exception of a few cylindroids in two cases.

This would seem to show that approximately 5% had a transitory albuminuria which we may designate perhaps as functional. This functional group comprises over 80% of the cases of albuminuria without organic disease. Our experience with reëxamination leads us to believe that a rather definite and constant number of young men of eighteen will show albumen in the examination of a single specimen of urine but that with each reëxamination the individuals making up this number will largely vary. Such individuals do not fall into any particular postural group, nor do they have any recognized type of bodily defect. In fact these individuals were physically sound.

The six men who showed albuminuria on repeated examination were found to have albumen only in specimens taken during the day and none in the morning specimens. This observation was constant in further examinations. In the routine physical examinations these six men had been classified according to posture as "D",[7] that is, having very poor standing posture and very poor mechanical use of the body. According to current descriptive terms these men had both postural and orthostatic albuminuria. One hundred and seventy-nine, or 34.8%, of the whole freshman class were classified as "D", but nevertheless it should be noted that only 3% of those who had very bad posture had albuminuria.

Further reference to the physical examination of these six men, however, revealed the following facts: Two had slight varying degrees of hypertension and tachycardia, and therefore had an unstable circulatory condition. In one instance the blood pressure varied from systolic 140 and diastolic 80 to systolic 120 and diastolic 90 with a pulse rate from 72 to 96. Four of the six men had definite spinal curvature and these same four had definitely palpable glands. Five were of what may be designated obviously nervous make-up. They were rather thin, poorly developed individuals, and easily disturbed. The albuminuria in those cases was certainly orthostatic and was furthermore associated with bad posture, but there was a further association in five of the six cases with nervous instability and with a physical condition below par. The question arises as to which of these so-called causes the albumen is due. The impression gathered is that the associated defects, the posture, the appearance of albumen, the orthostatic nature of the albuminuria and the nervous instability are together merely evidences of what might be termed substandard efficiency of the physical machine.

Whether these men or those having the transitory albuminuria mentioned above will be subject to nephritis in later life is difficult to foresee, but the evidence is conspicuously lacking. Some basis for investigating this point was available in some of the older men in the university who had shown albuminuria at a previous examination one to five years before. They were reëxamined and the tendency seemed to be for the albuminuria to disappear except in the cases of those displaying the constant orthostatic type. For example, the urines of six men who had shown albuminuria five years ago were reëxamined. Three showed albumen at this time. Of these only one showed it on the second examination and this was constant in repeated examinations. This albuminuria was of the orthostatic type with no other positive urine findings or positive feature of physical examination. Of the group examined four years ago, fourteen remained who showed albumen on the previous examination. Of this number five showed albumen on reëxamination. These five in turn showed only three with albuminuria in a subsequent examination. Only one of these cases was orthostatic in type, but all three were unstable as to blood pressure, heart rate, and general temperament. Of the group examined three years previously five men out of eighteen who had showed it before, had albumen on reëxamination. This examination was repeated, but the five still had albumen. Of these five three showed albuminuria on the third examination. One of these men showed albuminuria of the orthostatic type, and the other two nothing beyond consistency in the finding. The general physical examination of all three was otherwise completely negative. Of the group examined two years previous nine men out of twenty-one with a positive test on the original examination showed albumen. Of these nine, two showed it in the second examination. One of these albuminurias was orthostatic in type and the other merely persistent. Both cases were otherwise negative.

This evidence would seem to point to the fact that albumen of the transitory type after a lapse of four or five years has some slight tendency to disappear. Since classification of posture was not done at that time, no effort was made to determine which of these men showing albumen had postural defects. In support of this, it is interesting to note that in each group about half the men with albumen previously, had dwindled to 1/6 or 1/7 who were constant and to 1/3 who were of the transitory type. In other words it is probably justifiable to assume that the other half of the group who could not be reached would show the same findings. Then, out of thirty-five showing albumen originally, only twelve showed the transitory type and five the orthostatic type. The larger number in each case being those with the most recent original examination, more lost their albumen each year, while the constant ones showed tendency to remain, and in numbers nearly the same as the subjects of a similar test for the first time this year. Of the two types of albuminuria, transitory and orthostatic, the latter seems to have a distinct tendency to persist. This was shown by the six men above mentioned, all orthostatic, and by the fact that the orthostatic type persisted in the other groups after a number of years. All these findings both in the group examined this year for the first time and in the older groups, seem to minimize the significance of the transitory type of albuminuria. In no other case were there any of the usual evidences of nephritis besides the albumen.

Albuminuria of course cannot be regarded as a normal finding even if the actual significance is trifling. An attempt was made to observe these cases of albuminuria with a view of determining if possible whether the albuminuria might be regarded as an indicator of physical or mental inefficiency. As stated above, a persistent albuminuria of the orthostatic type is associated with certain defects of posture or of circulatory stability. Yet these defects exist without albuminuria. Pertinent evidence is presented by the fact that the men who were able to make the various freshmen athletic teams showed about the same percentage of albuminuria as the class as a whole, or even a greater percentage. For example, of the total 33 track candidates in the freshman class, about 7½% had albumen, which is not far from the 7% class total. Of this number, 17 made their numerals and of the 17 some 11% showed albumen. None of the larger point winners had albuminuria. Of the hockey team, from a list of 60 candidates, a little over 6% had shown albumen; while of those who made their numerals, some 15% had shown albumen. However, it was worth while noting that of these numeral men, the regulars who constituted the team had no albumen. On the football squad were 76 candidates with 23 receiving numerals. The percentage showed albumen to be about equal in both cases, namely 4%. Only one of the first eleven had albuminuria. Some 27 candidates played basketball, of whom 4% showed any albumen. This investigation would seem to indicate that albuminuria has little or no significance as it appears in the ordinary healthy youth exercising normally, and that the youth with albumen has an equal chance. Furthermore, it seems worth while noting the fact that the albuminurias in these freshmen athletes were of the transitory type. None of them was orthostatic in type. This again seems to lessen the importance of the transitory type of albuminuria. However, the albumen has some slight significance when this ordinary healthy youth is subjected to a moderate strain involved in competition for a class athletic team. He does not do as well as the man without albuminuria. He apparently does himself no harm, but the albuminuria seems like an advance indication of what is later proved true by athletic competition, namely that he is not quite so efficient physically.

Inquiry made as to the academic standing of the men showing albuminuria revealed no more significant fact than that their marks were good. In fact, of the forty showing albumen only five had marks which would average below "C." This was probably much better than the case of any other forty men picked at random or by means of any similar classification.

It was found on examination of the squads of candidates for university football, hockey, and baseball teams that none of these men had in their previous examination as freshmen showed albumen this year at an examination a few weeks previous to the final competitions in their particular sport. This would seem to be evidence in favor of the appearance of albumen being one of those symptoms of the reduced physical efficiency, spoken of previously. These men on the varsity teams were of course subjected to fiercer competition and greater strain. Few of them showed any other symptoms such as unstable blood pressure, fundamentally defective posture, etc., which we were inclined to consider of equal importance with the appearance of albumen. A man with albumen then would not seem to have quite the physical fitness for severe strain or physical competition that the man without it has. In just the same way, the man with minor physical defects of any other nature would be in the same position. In this particular individual the mechanical use of his body, the instability of his blood pressure or of his nerves, the appearance of any other minor physical defect such as poor use of his body might merely indicate the measure of his physical efficiency. Whether these things, taken together with albumen as an outstanding feature, actually constitute a real measure of a man's physical efficiency is difficult to say.

The question arises as to just how these slight defects such as albuminuria might operate to give us this measure. In theory it seems possible that there may be a certain threshold beyond which men of this type excrete albumen. This threshold obviously is lower for the group under discussion than for the other men, since nearly anyone will excrete albumen after severe exertion, as the literature shows. Just what this threshold is and the cause thereof remains to be found, as well as what features influence it. As mentioned above, the impression produced by the information gathered here is that this threshold is comparable to a fatigue threshold and may be a protective mechanism running parallel with that of fatigue; which prevents such a man from indulging in harmful exertion, exertion harmful to him but not so to the man of more stable physical makeup. In considering the transitory albuminuria it may be that men showing this, are going through a stabilizing process in establishing their threshold. As they grow older their organism becomes stabilized so that eventually they show no albumen under any circumstances, which tends to make us disregard albuminuria of this type.

These men in college represent a definitely circumscribed age group in which a certain number show albumen anyway. Examination of an age group about ten years older shows few with an albuminuria that might be termed functional. Enough individual cases of men in the graduate schools of Harvard University have been studied and followed to warrant the assumption that after the college age these cases of albuminuria show an increasingly greater tendency to disappear except in the orthostatic cases. This would tend to discredit the weight often given by insurance and more particularly army examinations to the appearance of albumen in young men of this age, especially since the greater number appear to be of the transitory type.

In conclusion, it seems only fair to say that a certain amount of evidence points toward postural causes for albuminuria which we are in a position to substantiate somewhat. Also a small amount of evidence would seem to indicate that a certain metabolic or nervous instability is also a predisposing cause. On the other hand, suppose we assume that which seems reasonable, namely, that faulty posture or poor bodily mechanics is simply contemporary with albuminuria in the indication of subnormal physical efficiency and a nervous instability, and is not simply a cause of the albuminuria. On this basis, if the appearance of albumen is merely one of a number of indications, no one of these indications would signify that a man should be barred from ordinary athletics. So far our observations have shown that the athlete with albumen in his urine has only the transitory type. Perhaps, on the basis of the threshold hypothesis suggested above, he is not as efficient physically as the man without albumen. The man with the orthostatic type does not seem to feature as an athlete. Yet there seems to be no very good reason why he should not participate in athletics. Such a man should of course be watched carefully. From the evidence so far gathered the orthostatic albuminuria would not signify that he will be more subject to nephritis in late years since there seems to be some slight evidence of its tendency to decrease or disappear during the four years of the ordinary college curriculum.

Hence it would seem justifiable to disregard the transitory type of albuminuria except as an index of physical ability during a definite time of life. The orthostatic type, on the other hand, while indicative of no physical deficiency serious enough to bar the individual from athletics, seems worthy of close observation.

REFERENCES.

[1] Osler and McRae: Modern Medicine, Vol. iii, Lea and Febiger, 1915.
[2] Barach, J. H.: Amer. Jour. Med. Sci., 1920, Vol. clix, p. 398.
[3] Holst, P. F.: Norsk Magazin for Laegevidenskaben, November, 1915, Vol. lxx, No. 11. Abstracted, Jour. A. M. A., 1915, Vol. lxv, p. 2206.
[4] Jeanneret, L.: Archives de méd. des enfants, Paris, 1915, Vol. xviii, No. 9, p. 461. Abstracted, Jour. A. M. A., 1915, Vol. lxv, p. 2039.
[5] Nicholson, F. D.: Practitioner, 1914, Vol. xciii, p. 113.
[6] Barringer, T. B.: Archives of Int. Med., June 15, 1912, Vol. ix, No. 6. Abstracted in Jour. A. M. A., 1912, Vol. lix, p. 225.
[7] Brown, L. T.: Boston Medical and Surgical Journal, June 24, 1920, p. 649.
[8] Lee, R. I.: Clinics of North America, January, 1920, p. 1059.

A GENERAL PRACTITIONER'S PRACTICE

By Paul Richmond Withington, M.D., Milton, Mass.

When I was about to graduate from the medical school I tried to find out what sort of a hospital appointment would be of the most value to a man who wished to do a general practice outside of, but easily accessible to, a large city. All of my medical friends advised me to take a medical appointment, all my surgical ones said, "You will find surgery of more value." Of my friends who specialized, each held that his specialty would be of the most use, should I be able to take a supplementary appointment. Obviously the number of appointments that one man can take are limited, and it has occurred to me that perhaps the tabulation of cases actually seen in the first ten months of a practice such as mine might be of assistance to others who, in the future, will have to decide the same question for themselves.

Before giving the table and my conclusions from it, I should like to report in some detail two of the cases which were of special interest.

The first is that of a girl of 18, seen by me on April 19, 1920, during the temporary absence of a colleague. Her family history was negative. P. H.—She has had measles, mumps, pertussis, and influenza. She has also had frequent sore throats which had left her with a "strained heart muscle," and until this year her exercises had been limited. Now, however, she plays baseball and hockey. Last summer she had "renal colic." P. I.—On the afternoon on which I saw her, she had played baseball. At dinner, though not hungry, she had eaten soup, chicken, potato, and squash. Two hours later she vomited, and complained of a persistent, non-radiating pain in her right "hip." Her bowels were always irregular. Ctm. always irreguar, one week early or late—the last, three weeks ago. P. E.—T., 99.4°. P., 88. W. d. and n., restless, pale girl. Heart and lungs entirely negative. Abdomen also negative, save for a slight rigidity and tenderness in R. L. Q.—no true spasm. No costovertebral tenderness. Knee jerks normal. Hip negative. B. P.—120/85. W.B.C. 10,800. Hglb., 70%. Urine—Turbid, pink, alk.; sugar absent; alb., V.S.T. On centrifuging, blood macroscopically in large quantity. Microscopically epithelial and squamous cells. Much blood. Amorphous urates and cystin crystals.

The condition is not common; one authority says but 131 cases are on record. Cystinuria is frequently hereditary (though no history of heredity was obtained in this case), and often causes gravel in the urinary tract.

The second case was that of a cyanotic engineer who was sent by his "boss" to an insurance office where I was, "to see if his heart condition made it safe for him to operate his locomotive." A casual examination of heart and lungs was, to my surprise, entirely negative. I therefore had him go to my office for a fuller physical examination. To my further surprise his blood examination was not abnormal. His Wassermann was negative. I was at a loss, but went over his history again more carefully; it gave me the solution, and shows the advantage of taking full and careful histories. The patient had had frequent attacks of indigestion for which there had been given silver nitrate tablets with relief. Thereafter he had taken them "ad lib."—it is hardly necessary to add that my "cyanosis" (and, I understand I was not the only physician who so considered it) was in reality argyria.

The following cases were seen in a self-respecting community situated 10 miles from the centre of Boston, but beyond the "one-fare zone" of the electric cars,—hence rural in character. I do obstetrics only in an emergency, and I am glad to say that but few emergencies have arisen. Venereal diseases are conspicuous from the fact that, if they occurred, they were not recognized.

SURGICAL. 55 CASES.

Fractures	Colles	2	4
	Olecranon	1	
	Rt. tibia	1	
Sprains	Knee (with synovitis)	2	5
	Ankle	1	
	Finger	2	
Renal calculi—cystinuria			1
Lacerations, contusions, and abrasions (One of severed tendo Achillis)			24
Punctured wounds			4
Foreign bodies	foot 1 hand 1		2
Removal hypertrophied great toe nail			1
Woodchuck bite (hand)			1
Septic	Abscess, left forearm	1	5
	Furunculosis	2	
	Paronychia	1	
	Cervical adenitis (incised) (tuberculosis?)	1	
Foot strain (with bunions, 1)			2
Leg strain			1
Sacro-iliac strain			1
Acute traumatic arthritis great toe			1
P. O. amputation both breasts for cancer (?) Metastases in lung (and myocarditis)			1
P. O. adhesions			1
Umbilical hernia			1
Ruptured varicose vein			1

GYNECOLOGICAL AND OBSTETRICAL. 5 CASES.

Miscarriage	1
Threatened miscarriage	1
Toxemia of pregnancy	1
Pregnancy with gastritis	1
Endometritis (with neurasthenia)	1

MEDICAL. 180 CASES.

I.	*Respiratory tract*			73
	(*a*) Mild infections of unknown etiology (including "influenza")		46	
	Complicated by			
	broncho-pneumonia	2		
	otitis media	2		
	pyelitis	2		
	(*b*) Bronchitis		7	
	with enteritis	1		
	(*c*) Lobar pneumonia		1	
	broncho-pneumonia (reported elsewhere as complicating other diseases)	3		
	(*d*) Pulmonary tuberculosis, active		2	
	with pulmonary hemorrhage	1		
	healed pulmonary tuberculosis	1		
	fibrinous pleurisy	1		
	(*e*) Smoke inhalation		1	
	(*f*) Asthma		1	
	(*g*) Tonsillitis		8	
	given antitoxine	2		
	acute nephritis complicating	1		
	(*h*) Pharyngitis and laryngitis		2	
	(*i*) Sinusitis		1	
	(*j*) Cervical adenitis (not incised)		2	
II.	*Gastro-enteric tract*			15
	(*a*) Gastritis		4	
	(*b*) Gastritis with enteritis		3	
	(*c*) Enteritis		1	
	(*d*) Constipation		5	
	(*e*) Achylia gastrica		1	
	(*f*) Infant feeding		1	
III.	*Cardio-renal system*			14
	(*a*) Acute nephritis		1	
	(*b*) Hypertension		10	
	with chronic nephritis	9		
	Complicated by			
	myocarditis	1		
	angina pectoris	1		
	cerebral hemorrhage	1		
	(*c*) Myocarditis		1	
	(*d*) Functional heart		1	
	(*e*) Cystitis		1	
IV.	*Contagious diseases*			15
	(*a*) Diphtheria		1	
	(*b*) Measles		13	
	with otitis media	1		
	pyelitis and otitis media	1		
	broncho-pneumonia	1		
	(*c*) Mumps		1	
V.	*Eye*			13
	(*a*) Conjunctivitis		12	
	(*b*) Burn of conjunctiva		1	
VI.	*Skin*			7
	(*a*) Urticaria		2	
	(*b*) Pityriasis rosea		1	
	(*c*) Epidermis phyloninguinalis		2	
	(*d*) Poison ivy		2	
VII.	*Ear*			7
	(*a*) Otitis media		3	
	reported above as complicating other illnesses	4		
VIII.	*Nerve*			5
	(*a*) Epilepsy (?)		1	
	(*b*) Dementia praecox		1	
	(*c*) Neurasthenia		2	
	(*d*) Traumatic psychosis (with hypertension and myocarditis)		1	
IX.	*Miscellaneous*			31
	(*a*) Eneuresis		2	
	(*b*) Argyria		1	
	(*c*) Undiagnosed		8	
	(*d*) No disease		4	
	(*e*) Measles suspect		2	
	(*f*) Malnutrition		2	
	(*g*) Debility		1	
	(*h*) Routine examination		4	
	routine urinalysis	2		
	(*i*) Acute rheumatic torticollis		1	
	(*j*) Myalgia		1	
	(*k*) Chronic arthritis		4	
	(*l*) Acute infectious arthritis		1	
TOTAL				180

Ninety-one of the above cases were seen at a boys' school, of which I have been appointed physician. All were under 18 years of age. Of the remaining, 80 were over 18 years, 49 were under 18.

I conclude from my experience, as illustrated by this table, that anyone undertaking a "near urban" type of country practice would do well to take a surgical hospital appointment, if possible, supplementing it with a Children's Medical; that while taking the latter he would do well to perfect his technique in the performance of his paracenteses. If unable to take more than one appointment, I would like to remind him that it is not necessary to be a resident interne to pick up additional knowledge in the various branches of medicine—out-patient departments give similar opportunities for less fortunately placed young men, and are anxious to procure their services.

Clinical Department.

AN UNUSUAL NEPHRITIS.

By F. Van Nüys, M.D., Weston, Mass.

Mrs. A. C., aged 22, entered the Waltham Hospital July 18, 1919, remaining there 43 days. She reëntered May 29, 1920, and died June 30, 1920. She was under close observation for nearly a year.

Her family history is negative except that her brother recently shows albumen in the urine after suffering for months from "indigestion." No diseases in childhood except measles. Excellent health, but for occasional sore throats, up to childbirth four years ago. No miscarriage.

Present Illness: Since her child was born, she had fair health up to the summer of 1918. Then, without ascertainable cause, she gradually developed nephritic symptoms—pallor, headaches, oedema of hands and feet, occasional nausea and vomiting, dizziness, dyspnea on exertion, and failing eyesight up to almost complete blindness. For the last six months she had suffered from paresis and partial anaesthesia of the left arm and leg. In June and July of 1919 she seemed close to death. She entered the hospital with orthopnea, anasarca, pernicious vomiting, semi-coma, partial paralysis of left half of body, and nearly complete blindness; in short, impending uremia.

Physical Examination: A small, pale, emaciated though bloated woman. Throat, tongue, and ears are negative. Teeth decayed. Skin pale. Pupils equal and react normally. Knee-jerks lively. Left ankle clonus. Lungs negative, save for moist râles at bases. Heart 19 cm. wide on percussion; action regular and rapid; sounds forcible; a blowing systolic murmur at apex transmitted to axilla; aortic second increased. Blood pressure 220/120 (this later fell and kept about 180/115). Abdomen full and soft; no masses, tenderness, or spasm; spleen not palpable; liver sixth rib to costal margin. Eye grounds showed choroidoretinitis so marked that little normal retina could be found. She could make out the form of anyone standing beside her bed.

Urine: The 24-hour quantity varied from 250 to 1500 c.c., usually about 800 c.c. Sp. gravity 1002 to 1010. Reaction acid. Sugar absent. Albumen always a heavy trace (8%). Microscopically a rather heavy sediment. Many granular, hyaline, and cellular casts. A few waxy casts. Many red blood cells, mostly shadow forms. Little fat seen. Later on in the disease the casts came in showers.

Treatment: For almost a month usual methods of treatment were tried with very little benefit. She remained in about the same condition. She was put on absolute rest, low protein (40 to 50 gm. protein daily), and as high fat and carbohydrate diet as possible. The caloric tables showed that she received insufficient food because of anorexia and uncontrollable vomiting. I believe that free daily movements of the bowels, and sweating when her strength permitted, enabled her to live through the first month in the hospital.

Caffein, diuretin, digitalis, nitroglycerin, and thyroid extract were tried at one time or another with no appreciable effect.

Finally Fischer's treatment was begun on August 16, 1919, with immediate and remarkable benefit. She received his hypertonic salt solution (sod. chloride 14 gm., sod. carbonate 10 gm., and water 1000 c.c.) daily by the Murphy drip in the rectum, and alkalies and sodium chloride freely by mouth. In the next ten days her uremic symptoms disappeared. The anasarca lessened gradually. The 24-hour quantity of urine rose to 1500 c.c. and above. The headache, vomiting and stupor cleared away. The blood pressure fell to 185/115 and remained thereabouts for many months. Appetite and digestion returned. She could sleep on one pillow and her previous dyspnea was wholly relieved. Eyesight improved so that she could read the headlines of a "yellow" newspaper, although the eyegrounds looked as bad as before.

Fischer's treatment gave so much discomfort that in two weeks the patient chose to discontinue it wholly and return home in an invalid but comfortable condition. At home she was put on the low protein diet.

Laboratory Findings: For the first few weeks little work was done in kidney or other tests because death was expected daily.

Blood: Hemoglobin 35%. Red cells 2,840,000. White cells 9000 per cubic mm. The smear was typical of secondary anaemia No blasts. No stippling. Feces negative to graiac test.

Wassermann tests of both blood and spinal fluid were negative.

A number of modified Schlayer tests were done, all with about the same result. The following (Diagram 1) was taken after the Fischer treatment had improved her condition enough to allow her to take sufficient food and liquid to make the test worth while.

DIAGRAM I.

TIME OF DAY	URINE c. c.	URINE Sp. G.
6 to 8	110	1010
8 to 10	290	1008
10 to 12	240	1004
12 to 2	300	1004
2 to 4	250	1004
4 to 6	110	1002
6 P.M. to 6 A.M.	1000	1008
TOTAL, Day	1300	
TOTAL, 24 hours	2300	
Intake of fluid	2000	

Intake of NaCl was 9 gm. The output was 5 gm.
Output of total solids, 35.8 gm.

Impression: Hedinger's and Schlayer's diet, used in the above test, puts a heavy load of elimination upon the diseased kidneys. In this case the water elimination was excellent—a vast improvement in function over that prior to the Fischer treatment. The fact of the output being greater than the intake was probably due to the disappearing anasarca, because subsequent similar tests failed to give this feature. The function of water elimination remained elastic all that fall and winter.

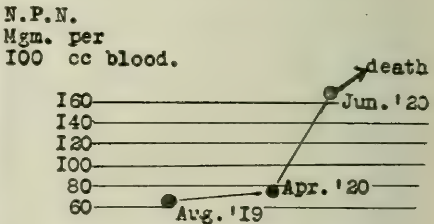
On the other hand, the kidneys' ability to concentrate urine is manifest, and confirmed by five subsequent tests. Apparently the kidneys showed the height of this ability in the early forenoon, a low steady performance from 10 to 4, and almost nothing from 4 to 6—namely, a function which fails as the day progresses.

In theory the subnormal output of total solids, the constantly low specific gravity, the incomplete elimination of NaCl, combine to make a diagnosis of tubular rather than one of vascular hyposthenuria. Here, however, the later post-mortem findings prove that the hyposthenuria was not wholly one or the other, but both combined.

The phenolsulphonephthalein test was given during the year six times in all. Not once did a trace of the dye appear in the urine at the end of two, or of 24, hours. It may be that this patient's body destroyed the dye with peculiar rapidity and completeness, and that, if her body destruction had been 20% to 40% of the dye, as in the average person, she might have eliminated some of it in her urine. If, as has been said, the red test is a reliable index of kidney elimination we should expect the speedy death of the patient. This case, however, illustrates the fact that the kidney may eliminate one substance with difficulty (salt), another easily (water), and a third not at all (red dye). Prognosis cannot be based on one functional test.

The blood nitrogen and sugar determinations were made by Dr. F. L. Burnett of Boston. The blood was taken after a six-hour fast. The protein intake at no time exceeded 55 gm. in the 24 hours.

NON-PROTEIN NITROGEN OF THE BLOOD.



(Normal—20 to 30 mgm. per 100 c.c. blood.)

The first N-PN. was taken while, under Fischer's treatment, her uremic symptoms were fast disappearing. During the winter at home she led a semi-invalid life with periods of comparatively little sickness. Twice she was able to go sled riding. In February she had a slight attack of influenza, after which her uremic symptoms gradually reappeared. The last N-PN. reading foretold her approaching death.

BLOOD SUGAR.

July, 1919	.22%
April, 1920	.12%
June, 1920	.07%

(Normal blood sugar, 0.7% to 0.11%)

The high blood sugar was discovered by accident. The cause is unknown beyond the fact that the blood of chronic nephritics sometimes shows a higher sugar content than normal. The lower contents in April and June are due probably to partial starvation in the terminal stage of her disease.

The patient had become so accustomed to her chronic uremic poisoning that it seemed she might live indefinitely. Finally, however, she developed a right-sided purulent pleurisy and died having the same symptoms with which she had entered the hospital nearly a year before.

Permission for a partial autopsy was obtained. The kidneys were small, firm, pale, with adherent capsules. Weight, 126 gm. The report of the pathologist, Dr. F. L. Burnett, is given.

"In sections of the kidneys almost one-half of the tissue is composed of fibrous cells. Fully one-half of the glomeruli are obliterated, and are evident only by a contracted mass of fibrous material which often presents hyaline degeneration. Many of the convoluted tubules, too, are obliterated, and those that remain show a hydropic degeneration. The descending and ascending loops of Henle are also obliterated; although more of these are apparent than any other parts of the tubule. Numerous hyaline and timely granular casts are apparent also. The capsule of the kidney is moderately thickened and the arteries which sometimes present a slightly thickened media are in general not abnormal. The tissue does not contain a great deal of fat. Scattered generally through the tissues are numerous areas made up of lymphocytes, but they are irregular in shape and areas of necrosis are not apparent within them."

The patient's clinical history might be explained from this picture of the kidney tissue. Apparently many glomeruli were destroyed and others spared. Those tubules which escaped destruction were badly crippled. The tubules on the whole suffered more than the glomeruli. The patient for a good while had a barely sufficient kidney parenchyma which gradually was choked out by the increase and spread of fibrous and scar tissue.

* * *

NON TUBERCULOUS COMPLICATIONS OF PULMONARY TUBERCULOSIS.

By Herbert F. Gammons, M.D., Dallas, Texas.

The differential diagnosis between pulmonary tuberculosis and other conditions simulating this disease in its local reflex and toxic symptoms will be in all probability, a problem for years to come.

The problem is made more difficult when we realize that many tuberculous suspects have in addition to an active or healed tuberculous focus an active focus of infection due to other organisms than the tubercle bacillus either in the lungs or in some other organ. However, in patients with sputum containing bacilli there are found one, two or more conditions which cause symptoms that are blamed on the tuberculous condition and which influence the prognosis and treatment greatly if discovered and remedied.

It is unfortunate that so many physicians after finding a positive sputum or physical signs in the chest, stop making further examination of the patient and feel that all symptoms such as temperature, chills, etc., are due to the tuberculosis. The natural course of a tuberculous infection is toward improvement, and in any given case of apparent good resistance, with a continuation of symptoms after proper rest and hygienic treatment for the tuberculous condition has been in effect, some other focus of infection should be sought out and treated.

This does not mean that reckless removal of tonsils and teeth is advocated in patients with lowered resistance. The probable improvement must be weighed against the probable reaction following operations. Nature, however, is burdened with infections and conditions, especially mental, in addition to the tuberculosis, which can often be remedied, which in many cases have prevented an arrest of the disease.

Many times a post-mortem examination has shown there may be superimposed infection in the lungs, the tuberculous infection while discharging a few bacilli being the slightest in extent and the influenzal or pneumonic condition being of greater extent and severity. Often the body tissues need building up, especially the blood, and occasionally, I have seen patients in whom a marked shortness of breath was apparently due to deficient oxygen-carrying properties of the blood and cleared up under hypodermic iron injection. It has been the habit with many physicians once a diagnosis has been made of pulmonary tuberculosis not to look further into the case, but to blame any and all symptoms on tuberculosis, and in some instances this attitude has been the cause of deaths on account of the lowering of resistance, due to invasion of other organisms.

The improvement in patients' mental attitude following clearing up of other infections is wonderful at times, and this improved mental attitude increases resistance to tuberculous infection.

The following cases show what results can be accomplished in some instances. It is true that oftentimes tuberculous patients have tonsils removed and teeth extracted and still continue to exhibit the symptoms that were noticed before such operation. This fact, however, should not deter us from doing everything possible that promises help for any and every patient suffering with tuberculosis.

Case 1. V. W. Advanced tuberculosis, slight fibroid condition at right top, left entirely infected with cavation in upper third. Pneumothorax had been administered with good results and a compression of lung resulted as shown by x-ray. Patient, however, continued to run slight fever and had frequent attacks of tonsillitis. Tonsils were removed and the operation was followed by a drop in temperature. Temperature has remained normal since tonsils with pus pockets were removed.

Case 2. W. H. Scattered râles in both lungs. Slight cough, no expectoration. Fever persistant and also pains in different parts of the body. This patient had taken treatment for a long time without any decrease in temperature. X-ray examination of teeth showed abscessed tooth which was removed, and following this temperature has been normal.

Case 3. F. L. Moderately advanced case of tuberculosis has had chronic appendicitis, symptoms of toxaemia and irregular temperature. Appendix was removed which was ulcerated and this was followed by drop in temperature to normal.

Case 4. F. B. Advanced case of tuberculosis with marked shortness of breath. Blood examination showed a very low haemoglobin content. Hypodermic iron was administered and after a few doses breathing became normal.

Case 5. Mrs. W. Scattered inflammatory conditions in both apices. Fever irregular and higher every third day. Blood examination showed malarial parasite and following eight weeks of quinine treatment, patient is running normal temperature and has gained in every way.

The above cases show that we must not stop when we have made a diagnosis of tuberculosis but we must find out also if there are any complications and, if so, overcome them.

DURATION OF PREGNANCY.

By Hilbert F. Day, M.D., F.A.C.S., Boston.

During the last few years of caring for obstetrical cases, I have been somewhat troubled at figuring the probable date of delivery and it has been borne in on me that certain women were more apt to run over the customary ten lunar months than others.

With this in view, I have made a study of my last 25 private patients who were allowed to enter labor normally, taking into account particularly the interval which occurred between their menstrual periods. Of the 25 patients, 4 had an interval less than 28 days, and 8 an interval longer than 28 days, varying from 29 to 33 days and in one case 35. There were 13 cases with an interval of 28 days. The actual duration of pregnancy from the beginning of menstruation to the day of delivery has been figured out in all of these cases and the groups averaged with the following interesting observation:

No. of Cases	Interval in Days	Actual Duration of Pregnancy in Days
4	less than 28	277
13	28	283
8	more than 28	295

The above noted findings are deduced from too few cases to draw any definite conclusions, but I wish to submit it as a suggestion for further study. The occurrence of longer pregnancies in women who have a longer than normal interval has induced me to choose for them as a probable date for confinement a later day than I would give to a woman who has a 28-day interval.

◆

Appointment of Dr. Charles M. Campbell.—Dr. Charles Macfie Campbell has been appointed professor of psychiatry at the Harvard Medical School. Dr. Campbell is a graduate of the University of Edinburgh, class of 1897, where he received his medical degree in 1901. He has been associated with the Psychiatric Institute of New York, 1908 to 1911, with the Cornell Medical School, and with the Bloomingdale Hospital. Since 1913, Dr. Campbell has been serving as associate professor of psychiatry at Johns Hopkins and associate psychiatrist at the hospital.

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FADS AND FALLACIES OF FASHION.

AMONG the numerous fads and fallacies which have become prevalent with the progress of civilization, there are several, to the folly of which some persons, particularly members of the medical profession, have become awakened. It is to be lamented that however assiduously these few apostles of health and rationality may endeavor to convert their obstinate and unenlightened fellows to a normal way of thinking and living, the majority of human beings, nevertheless, continue complacent and unheeding in their slavish ways. Consider for the moment the tyranny of mode and fashion—how it dominates our minds, our bodies, and our purses. To what heights of intellectual and artistic achievement might the human race aspire if the time and energy at present expended upon such unessential and injurious articles as modern headgear and expensive shirt-fronts were devoted to the higher arts! In what blissful comfort might move the servitors of stiff collars and fantastic heels! And yet, the medical profession, privileged as it is to guide the intimate affairs and habits of men, stands by and impotently allows the human race to bring upon itself all manner of discomfiture and disease caused by the foibles of human intellect.

Would one be bald, if it could be prevented? Would one, on the pretense of keeping warm that part of the human body which Heaven has endowed most generously with means of natural protection, bring upon one's self the inconvenience, expense, and the baldness which are the price of indulging in the pastime of hat-wearing? None can gainsay the irony of the fact that while a man is presumably keeping his head warm by wearing a hat, he is steadily and surely denuding his scalp of its most becoming and efficient covering. Yet how difficult it is even to persuade men that hat-wearing is the chief cause of baldness, that in pressing the scalp between the helpless cranium and the inexorable hat he is wilfully perpetrating the strangulation of the blood-vessels of his scalp and diminishing the blood supply to the crown, thereby leading to inevitable atrophy of the region so maltreated.

Scarcely less ridiculous and injurious than the above-mentioned and time-cherished article is the stiff-fronted shirt and the stiff collar worn by the easy victim of fashion's decree. They are no more sensible, no more innately elegant, and infinitely less comfortable than are the softer, more pliant and flexible variety. In cases where there is to be considered freedom of movement in relaxation to disease, as in serious heart and lung troubles, physicians should stringently prohibit the unnecessary hindrance to the respiratory movements caused by the armor-plate shirt-front. Perhaps the speculative psychologist can explain why man entails the unjustifiable labor, expense, and discomfort involved in displaying the small white patch of that article of dress which makes so pathetic and painful an object of the stout emphysematous man laboring with the sportive tendencies of his stiff-bosomed shirt and the sharp-edged bulwark which protects his plethoric neck from the baneful view of his companions.

It is a curious whim that men should conjointly expend thousands of dollars annually in the up-keep of the tyranny of fashion. Yet, is man alone to be condemned for indulging his insatiable desire to gratify unreasoning custom?

What can be said for the corset worn by the majority of the women of today, and of the delicate instruments of torture designed to deform and cripple the feet which were meant to be useful means of support rather than objects of whimsical regard and fretful solicitude? It is strange that with the eternally perfect models of Greek beauty for her emulation, woman should seek constantly the "newest spring" and the "most advanced autumn" styles in figure and footgear. The most utterly pernicious and thoroughly to be condemned example of modern bondage is the corset as it is made by the average manufacturer and adapted to the majority of women of today. Countless feminine ills and diseases are due to the constant downward pressure exerted upon the mobile pelvic and abdominal organs. Yet women will continue to wear improper corsets and ridiculous, unbeautiful, and unhygienic shoes until a physician is consulted for their attending ailments and they are forced to adopt more rational, if less fashionable, apparel. A great responsibility, therefore, devolves upon the medical profession—not only in correcting diseases already incurred as a result of obedience to the demands of fashion, but also in consequently freeing the intellect and the imagination of the human race for the cultivation of more worthy pursuits.

* * *

MEDICAL NOTES.

All-America Conference on Venereal Diseases.—The All-America Conference on Venereal Diseases, which will be held in Washington, D. C., from December 6 to 11, 1920, under the auspices of the United States Interdepartmental Social Hygiene Board, the United States Public Health Service, the American Red Cross, and the American Social Hygiene Association, is the first of a series of regional conferences suggested by the International Health Conference held at Cannes under the auspices of the League of Red Cross Societies. In an announcement of the preliminary program, it has been stated that the purpose of the administrative committee is to bring together recognized authorities in their respective fields and especially to make possible a comparison and evaluation of the methods now being employed in various parts of the world for the control of venereal diseases. As far as possible the presentation of set papers will be avoided, it being felt that full and free discussion will be far more helpful to those who attend.

The program will be so arranged that it will be possible for any delegate to attend all the meetings. In general, the morning will be devoted to a discussion by the Conference delegates of the scientific basis underlying the campaign for the control of venereal diseases, the afternoon to a discussion by the delegates of administrative methods, while the evening will be given over to general meetings where the various findings of the Conference delegates will be presented for consideration by the entire membership of the Conference.

The Conference will be preceded by special addresses on topics allied to venereal disease control, in some of the churches of Washington on Sunday evening, December 5.

At the general session of the Conference to be held Monday evening, December 6, addresses will be made by the president of the Conference and by other speakers who will deal with the broader outlines of the subject. Among the subjects to be discussed by the delegates during the Conference are the following: present status and recent progress in medical investigation, education as a means of controlling venereal diseases, law enforcement and protective social measures with individuals, social influences in the control of venereal diseases, administrative measures in the United States, Canada, Latin-American countries, and other countries and the relation of official to extra-governmental agencies, the toll of the Great Red Plague, and juvenile delinquency and public health.

The Conference Delegates will review past experiences and existing knowledge relating to the causes, carriers, treatment and prevention of venereal diseases, and will endeavor to adopt recommendations relating to a practicable three-year program for each of the North and South American countries participating, and to suggest plans for putting such a program into effect.

Danger in Horse-hair Shaving Brushes.—Surgeon-General Cumming, of the United States Public Health Service, has just issued a fresh warning against the use of horse-hair shaving brushes, to which not a few cases of anthrax have been traced.

He says: "The Public Health Service has

made every effort possible under existing laws and regulations to prevent the occurrence of anthrax due to infected shaving brushes; but in spite of its efforts anthrax cases occur and will continue to occur unless the public ceases to buy and use horse-hair brushes for shaving.

"It is the consensus of expert opinion that shaving-brush anthrax is contracted only when the shaving brush is made of horse-hair; and Congress at the next session will be asked to prohibit the use of horse-hair for that purpose. It is doubtful, however, if any effective measures can be taken by health officials to curtail the use of horse-hair shaving brushes now in trade channels, some of which are presumably infected, except by a direct warning to the public not to buy or use such brushes."

Dr. Cumming strongly urges the issue of such an appeal by state health officials and its widest possible publicity, as the only way, pending additional legislation, to obviate their potential danger.

BOSTON AND MASSACHUSETTS.

Plans of the Massachusetts Department of Public Health for Plague Prevention.—Dr. Eugene R. Kelley, commissioner of public health, has requested $25,000 from the Governor and Council that plague prevention measures may be inaugurated in the seaport cities and towns of Massachusetts. This work will be done in conjunction with other New England states having seaport communities.

At a recent conference held at the State House of the Commissioners of Health of Connecticut, Rhode Island, New Hampshire, Maine and Massachusetts a request was made that an officer of the United State Public Health Service might be detailed as an adviser in this work in each of the states represented. P. A. Surgeon L. L. Williams, Jr., has been detailed for this work.

It is planned to conduct a rodent survey in each seaport community. The Harvard Medical School, through Dr. Milton J. Rosenau, Professor of Preventive Medicine, has offered space for the laboratory examination of the rats. The personnel for this survey consists of a consulting director, bacteriologists, an expert rat trapper with six assistants, dieners, and laboratory and clerical assistants.

Strenuous efforts are being made to interest local authorities in enacting building regulations which will secure rat-proofing of new and old constructions. In the event that plague-infected rats are found, intensive trapping and rat-proofing will be undertaken.

As the infection is found in the rat some months before it appears in the human family, the wisdom of this survey is apparent.

The Vincent Memorial Hospital.—The following appeal has been issued in behalf of the Vincent Memorial Hospital:

Owing to the increased cost of operation, particularly of wages and supplies, the Trustees and Managers of the Vincent Memorial Hospital are faced with this alternative: either to obtain additional funds through the generosity of the public or to close their doors to the working women, to whom the Hospital has ministered for so many years, and this at the very time when physicians report the demand for hospital beds by people of moderate means as most acute.

The hospital was founded in 1890 by a small bequest from Miss Caroline Staples as a memorial to Mrs. J. R. Vincent, a well-known and benevolent member of the Boston Museum Theatrical Company. From its limited facilities on Chambers street, it has grown to the present efficient organization on South Huntington avenue.

Among the factors which have contributed to its success is the Vincent Club, founded in 1892 for the purpose of raising money for the hospital. The Club supports eight beds in the ward bearing its name, which is about one third the capacity of the institution. The hospital has somewhat suffered from the prevailing [illegible] tion that the Vincent Club bears the [illegible] of the hospital's support, for it will be seen that two-thirds the operating cost [illegible] from other sources.

The hospital building on South Huntington avenue occupies an ample lot of land, selected for its command of fresh air and sunshine as well as the fine outlook over the Parkway. This building necessitated the placing of a mortgage upon the property, now standing at $10,000, the whole or part of which, it is hoped, some friends will be moved to donate, for it is obvious that the interest payment of this sum depletes the funds otherwise available for the running expenses of the hospital.

The hospital is conducted on a strictly non-sectarian basis, and extends a cordial welcome to the limit of its capacity. The managers and trustees earnestly ask for assistance in the form of annual subscriptions, or of donations of $5.00, or of as much larger amounts as possible.

The Massachusetts Medical Society.

MATERNITY AID.

The physicians of Worcester North District, through A. H. Quessy, M.D., present the following brief to the Senate Ways and Means Committee:

Mr. President and Members of the Committee:

You have listened to the proponents of the Maternity Aid bills, and have heard them speak of the machinery they wish to create to give prenatal and postnatal care. You have been told with what paternal care the State Department of Health is willing to take it under its wing. Some have told you that it would cost the State the ridiculous amount of two hundred thousand dollars; others have admitted it would more probably cost at least two millions. The most important wheels of all this proposed new machinery are the physicians of this Commonwealth, the men upon whom you must depend, otherwise these bills would be useless. What do the physicians of this Commonwealth think about these bills? Have they been consulted? No. It is safe to say that not 50 per cent. of the physicians have an intelligent knowledge of these bills, and the reason is obvious because these bills have not generally been put before them for consideration. I have been delegated by the physicians of the Worcester North Medical District, and the physicians of the Fitchburg Medical Society, to appear before you and tell you what they think of these bills. I have been instructed to voice their unanimous opposition.

It seems necessary at this time to correct a wrong impression which may have had some weight before the Joint Committee at previous hearings, when it was said that the Massachusetts Medical Society and its 3800 physicians were in favor of these bills. This is not so. The Legislative Committee of the Massachusetts Medical Society, we are told, endorsed these bills, but they did so without referring the question to the different districts. The Worcester North District, after careful study, opposes these bills; so does the Bristol South District, and the Franklin District, and I have no doubt other districts would also oppose them. Therefore, when a speaker before the Joint Committee said he represented the 3800 physicians, members of the Massachusetts Medical Society, all in favor of the bills, that statement could not have been correct.

We ask, from what source or sources comes the demand for Maternity Aid? Are the physicians asking for it? No. To properly administer prenatal and postnatal care under State control it would be necessary to establish a department and sub-departments with high salaried officers and sub-officers, and we can understand why some specializing in obstetrics might favor these bills. We also believe it would be more fitting for the State Department of Health to be in a receptive mood rather than advocate these bills before the legislative committees. Is the demand for maternity aid statewide? No. Is organized capital demanding it? No. Are organized and non-organized labor voicing the expression of the rank and file for it? A few; not many. Is it the women with the large families, the real producers who seek it; or rather, is it the childless or the unmarried women who, instead of reproducing, feel that they must devote all of their time and energy to their poor unfortunate sisters who are doing their bit to increase the population of American citizens? These bills come from an erroneous idea in the mind of some people, based upon questionable statistics, that the health of the American nation had gone far below the universal standard, and that prenatal and postnatal care is the sole panacea for all our evils. We are sick and tired of social reforms which are constantly being foisted on us to cure us of what ails us, when nothing at all out of the ordinary is the matter with us.

We are told that it is a health measure; that this legislation, if passed, will reduce defective population, lessen need for state care of the insane, the half-witted, the indigent, the tubercular, the blind, the alcoholic, the criminal, the drug-ridden, and all the others of the fifty-seven varieties. What a dream! We were made right, but we have not kept ourselves right. Generations and generations of wrong living, bad habits, and what not have brought upon us the above conditions. Women and men as well have degenerated from the high standard of physical perfection which God gave us when he first made man. Why place the blame upon the few months that precede or follow our birth? Do the proponents of these bills propose to undo, by prenatal and postnatal care, what have been brought upon us by years and years of wrong living? It is well to seek remedies for the above evils, but it is ridiculous to say that prenatal and postnatal care is the cure. If the proponents of these bills are really in earnest in their endeavors to better the human race, the expectant mother and the offspring, I would suggest that they devote the same amount of energy in advicating more religion, better morals, better habits, better protection, by right dressing, better living and working conditions, less dancing, less theatres, more fresh air, less burning of the midnight oil, and many other things too numerous to mention. The results obtained would fade into insignificance the prenatal and postnatal proposition.

These bills are not wholly health measures. Germany had such laws, and to what did they lead? Germany adopted, years ago, those and other such laws, that she might produce a superman. Did she produce one? America has never had such laws. Was the American fighter inferior to the German soldier? The health and physical condition of the American people can well compare with that of any other nation; there are defects in all of them. Australia has prenatal and postnatal care and it is admittedly a failure. Germany with her prenatal and postnatal laws, and all her other social laws, did not produce a superman; she did produce a machine man, a man, State controlled; the State looked after the pedigree of his birth, controlled his education, regulated his habits, suggested his thoughts, etc., but he had no individuality. His health was not superior. While the German machine was winning, the German superman was at his best; when the machine began to lose, the superman went to pieces. Having no individuality of his own, he had cultivated no thoughts of his own; his courage was gone; he had no initiative of his own. The superman has proved himself to be the inferior man. These measures are essentially socialistic in tendency, as they are in Germany, and we don't want Socialism parading in this Commonwealth under the guise of health measures.

These bills are coming up at a very inopportune time; a feeling of unrest and dissatisfaction exists in our land. Our Government was founded upon true Democracy, guaranteeing to every man his rights and privileges. We have grown to be a great nation, our institutions have flourished, industry has prospered, labor conditions and wages are the best in the world. America has been a Heaven to the emigrant; our social and economic conditions have been inviting to all. And yet, some people are dissatisfied. And is it surprising when some faddists and social reformers suddenly discover that everything is wrong and must be reformed? Our system of education is said to be wrong and must be reformed and State-controlled. Our habits and appetites seem to have been in need of State and National control, etc.; we have not even been born right in the past, and in the future, the State must see to it that the child receives a better and more scientific birth. Probably, also, the necessity for birth cantrol by the State may develop in the fertile mind of some reformer. Our great Democracy is slowly giving way to Autocracy; individual rights are slowly but surely being sacrificed by such pieces of legislation and similar law, and we are plunging head first into Autocracy or State control. The State is not supreme; the individual is supreme; that is true Democracy. The individual existed before the State. The Pilgrim Fathers came here to enjoy rights and privileges which Autocracy denied them across the sea. They established a form of government — Democracy—to guarantee the rights and privileges they sought; thus the State was created for the individual. We have been living under this same form of government happily and contentedly.

Recently our country went to war; our soldier boys faced death that Autocracy should perish and Democracy should endure. Was the war we fought an unjust one? Can it be that we were wrong in fighting for Democracy in the face of so many late attempts to introduce Autocracy? Control by the individual is Democracy; control by the state is Autocracy, or, in other words, Socialism. These bills lead to control by the State, or Socialism; Socialism leads to Bolshevism; Bolshevism leads to Anarchy. We therefore oppose them because they lead the way to Socialism and because they are radically wrong.

Physicians have been told that such legislation must go through and that it were better to steer it than oppose it. The physicians of Worcester North District believe that the senators and representatives of the State of Massachusetts are willing to listen to an honest expression of opinion from the individuals who will be most affected by these bills. We don't want to steer them, even to have them amended. We oppose them *in toto* because they are radically and wholly wrong and cannot be partially right.

We oppose them because they are a step towards State control of the practice of medicine. They are a cat in a bag. You are asked to pass these bills which are not at all specific. The proponents cannot tell you how much it will cost to administer these laws, they cannot point to good results obtained in any country, they cannot specify in what way they propose to employ physicians, nor what remuneration they intend to give them for their services. They cannot specify in what adequate way they intend to give nursing and expert prenatal care, or nursing and hospital care at the time of confinement; yet, all these things are called for but not specified in the bills. They tell you the modified bill does not propose to give pay for medical services, and yet in Section 4 of Senate bill No. 506 we read: "The recipient of maternity care under this act, if remaining at home, shall be allowed in all cases to choose her own physician, subject to said physician's acceptance of the fee schedule for such cases, and other rules and regulations of the said department governing this act." By what authority, then, shall the State allow a woman to choose her own physician if the State is not paying for it? The interpretation of Section 4 leads us to believe that the State does intend to pay the physician, to allow the woman to choose her own physician, and that the physician must first accept the fee schedule, and all the rules and regulations which it is proposed to establish. Is not this controlling the practice of obstetrics? These rules and regulations are to be made at some future time by the State Department of Health, whose duty it shall be to thus control the practice of obstetrics. We therefore oppose these bills, because they are an entering wedge to State control of the practice of medicine.

We oppose them because they cast reflection upon the competency of the medical profession. The State Board of Registration in Medicine has passed upon the qualifications of every physician in this State, and has issued certificates and permits to practise medicine, obstetrics included; that ought to be sufficient. The bills establish another Board of Registration in the Department of Health. If there is anything wrong in the present system and arrangement of things, let the Board of Registration in Medicine see to it; that's what it was created for. Each department has enough of its own business to attend to without trespassing upon the duties of others. The place for a physician to train and qualify is in a medical school, not in the State Department of Health.

We oppose these bills because they are unnecessary. We have, at present, laws on our statute books. What is needed is to work out these laws to their fullest extent, then if they are not sufficient, amend them or make new ones. The State Department of Health has never been given more than advisory power; we have no objection to have that same power continued. The force of law has always been invested in the local departments of health; that is home rule, and we trust that it shall prevail. The very things sought for are now in a measure being accomplished. Physicians, under the law, report all births as they occur; the local Board of Health then sends a visiting nurse or the district nurse to follow up the case and help the physician to give postnatal care. This costs the State not one penny. It would be an easy matter to extend the work and make it even more effective under the same mode of procedure. Expectant mothers engage their physicians several months in advance; the attending physician is thereby in a position to give advice and prenatal care, examine urines, prevent complications, such as eclampsia, etc. Here again it would be an easy matter for the physician, in conjunction with the local board of health and the visiting nurse, to extend the work: the advisory function of the State Department of Health would find a very useful and broad field of endeavors. Thus we oppose these bills because they are unnecessary and because the same results can be obtained without cost to the Commonwealth.

We oppose them because of the enormous financial burden upon the taxpayers of this Commonwealth; the price would be astounding and prohibitive. Just think of it, a very conservative amount for prenatal and postnatal care would be at least two million dollars, and that alone is the cost price of the newly born. After the State has bought and paid for the child, we suppose, if the State is consistent, it would then be found necessary to give it an education and physical training under State control at a few million more. When the child is grown to adult life, the State again must consistently finance the control of its health and working efficiency, and when old age has brought to an end his useful career, an old-age pension would be the next thing on the program; add several millions more. Death would come as a fitting climax, and the least that could be done would be to give him a decent burial. All told, it's a simple problem of mathematics; if it costs two million for the birth of the State's children, how much would it cost by the time they were brought up and then dead and buried? The answer would be, millions and millions. Can the State afford it? No. Taxpayers could well object with righteous indignation.

One argument advanced by the proponents is based upon that contention that His Excellency the Governor favors these bills. Is it possible that His Excellency has given all due consideration to the pros and cons concerning this matter before making a recommendation? We doubt if His Excellency, realizing that these bills are filled with inflated ideas, that they are socialistic, that they are unnecessary, and that the cost would be ruinous to the State, we doubt if he would still desire to advocate them. If the object of all this philanthropic chatter is to give financial aid by the State to the poor and needy expectant mother, why not say so in plain words, and legislate accordingly? No one would object to that. Time and again physicians have given their services gratuitously in such cases. We believe it is unwise to force legislation by insinuation or by passing the buck to the Governor of this Commonwealth.

No trade or profession can claim more self-abnegation than the medical profession. Physicians are far from being selfish. Day and night, they administer to the needs of the sick; the poor have always found the doctors their friends. The doctors have voluntarily coöperated in all measures which would really improve the general health and reduce accidents, knowing fully well that by so doing they were reducing their own source of revenue. They subscribe to preventive medicine; they believe in it for the sake of humanity, but when it comes to handing over the practice of medicine to State control, the physicians of Worcester North District most strongly object.

PHYSICIANS OF WORCESTER NORTH DISTRICT,
AND OF FITCHBURG MEDICAL SOCIETY.
By A. H. QUESSEY, M.D.

* * *

THE next annual meeting of the Massachusetts Medical Society will be held in Boston, Tuesday, May 31, and Wednesday, June 1, 1921.

JOINT COMMITTEE ON STATE AND NATIONAL LEGISLATION.

NATIONAL MATERNITY BENEFITS.

A bill (S3259) "for the purpose of coöperating with the States in promoting the care of maternity and infancy" and "to provide instruction in the hygiene of maternity and infancy," is to come before Congress.

The bill provides a direct appropriation of $10,000 to each State and an additional appropriation of $2,000,000 to be increased annually to $4,000,000 in five years to be divided among the States according to their population. No state, however, is to secure any of this additional appropriation unless it makes an equal appropriation for the same purpose.

A "Federal Board of Maternal and Infant Hygiene" is to be created, consisting of the Secretary of Labor, chairman; the Chief of the Children's Bureau, executive officer; the Surgeon General of the Public Health Service, and the Commissioner of Education. This Federal Board is to administer the provisions of the act and coöperate with the State Boards.

In order to secure the benefits, any state must designate some board or a division of the State Board of Health to administer the provisions of the bill, in coöperation with the Federal Board.

Section 8 of the bill provides, "That the cooperative work in promoting the care of maternity and infancy shall consist of instruction in the hygiene of maternity and infancy through public health nurses, consultation centres, and other suitable methods, and the provision of medical and nursing care for mothers and infants at home or at a hospital when necessary, especially in remote areas; and this work shall be carried on in such manner as may be mutually agreed upon by the Federal Board and any State receiving the benefits of this Act."

Section 9 of the bill provides, "That in order to provide popular, non-technical instruction to the residents of the various states, particularly to those to whom such facilities are not accessible, on the subject of the hygiene of infancy, hygiene of maternity, and related subjects, the State Board described in section 4 is authorized to arrange with the State University, land-grant college, or other public educational institution for the provision of extension courses by qualified lecturers.

Section 11 provides, "That the facilities provided by any State boards coöperating under the provisions of this Act shall be available for all residents of the State.

The other sections of the bill deal with matters of detail, section 14 providing that no money apportioned to the States shall be applied to the purchase, erection, presentation, or repair of any buildings or for the purchase or rental of any buildings or lands.

Attention is called to the ambiguity of section 8. Does it provide for the medical and nursing care for mothers and infants at home or, if necessary, at a hospital; or for care either at home or at a hospital only when for some special reason it is necessary? The bearing of this upon proposed legislation in Massachusetts is obvious.

Correspondence.

PHYSICIANS IN THE HALL OF FAME.

New York, November 10, 1920.

Mr. Editor:—

A few months ago I sent out a plea for recognition of the medical profession in the Hall of Fame and especially for Morton as perhaps the most outstanding figure in American medicine. This was published in many of our leading periodicals, and yours was one which extended the hospitality of its columns to the cause. The Boston Medical and Surgical Journal was even good enough to publish a second and more elaborate plea and reply to the criticisms which had arisen in some quarters to Morton's claims. Thus, I am sure, you have in no small degree helped in the election of Morton's name. The outcome of the recent election must be gratifying to every American physician who is familiar with Morton's life, his struggles for recognition, and the sad experience he was made to undergo by those who attacked him during life and those who, up to this time, wished to withhold the credit for his work.

Our never-to-be-forgotten Osler, with his keen sense of justice, gave us the result of his profound study of historical medicine concerning Morton's share in the discovery and promulgation of ether anesthesia in the following words: "William T. G. Morton was a new Promethus who gave a gift to the world as rich as that of fire, the greatest single gift ever made to suffering humanity." And Professor Welch confirms the investigation of his life-long friend and in one of his recent letters to me he says: "Surgical anesthesia has been America's greatest contribution to medicine and surgery, and it would be a thousand pities not to have this recognized in the Hall of Fame. As only one name can be selected for this purpose, it is clear to me that this name should be Morton." Prof. Welch was one of the electors and his influence was doubtlessly an important factor in Morton's final triumph, for from the result of the election it is evident that the majority of the electors were of the same opinion as Professor Welch.

It will doubtlessly interest the readers of the Boston Medical and Surgical Journal to know the exact outcome of this year's election of America's immortals for the Hall of Fame. Of the 178 names voted on, the following seven were chosen: Samuel Langhorne Clemens (Mark Twain), who received 72 votes; James Buchanan Eads, the engineer, 51, Patrick Henry, statesman, 57; William Thomas Green Morton, discoverer of ether, 72; Augustus St. Gaudens, the sculptor, 67; and Roger Williams, the minister, a leader in liberal religion and founder of Providence, R. I., 66. The only woman who received enough votes to place her name on the roll was Alice Freeman Palmer, the educator, who received 53 votes.

That Morton, together with our most beloved, Mark Twain, should have received more votes than any other candidate is a particularly good omen for the medical profession, and it is to be hoped that in future elections the names of our other great pathfinders in medicine and surgery may not be forgotten.

Such names as Ephraim McDowell, J. Marion Sims, Benjamin Rush, Walter Reed, all deserve a place among the immortals in America's Hall of Fame.

Sincerely yours,
S. Adolphus Knopf, M.D.

SOCIETY NOTICES.

New England Dermatological Society.—The regular quarterly meeting of the New England Dermatological Society will be held at the Boston City Hospital Surgical Amphitheatre on Wednesday, December 15, at 3.15 P.M. Physicians are cordially invited to attend.

Henry D. Lloyd, M.D., *Secretary*.

Massachusetts Society for Mental Hygiene.—A luncheon, followed by the annual meeting, at the Copley-Plaza Hotel, Boston, Friday, Dec. 10. 1920, at 1 P.M.

Speakers: 1. Dr. Thomas W. Salmon, Medical Director of the National Committee for Mental Hygiene, New York: "Practical Tasks in Mental Hygiene."

2. Dr. A. W. Stearns, Medical Director of the Massachusetts Society for Mental Hygiene, Boston: "The Call for Mental Hygiene Activities in Massachusetts."

After the annual meeting of the Society will come the meeting of the Board of Directors.

RECENT DEATHS.

Dr. Samuel James Meltzer died at his home in New York, on November 7. Dr. Meltzer was born in Russia, March 22, 1851, and came to this country in 1883. He studied medicine at the University of Berlin and received his medical degree from that institution in 1882. Since 1906, Dr Meltzer has been at the head of the department of physiology and pharmacology at the Rockefeller Institute, where he discovered his method of "pharyngeal insufflation" which revived animals whose breathing and heart beats had ceased. In 1911, he announced the scientific proof of what he termed a "peripheral mechanism" for distributing substances throughout the body, aside from the circulatory system of the heart, veins, and lymphatics. He also made notable contributions to the treatment of tetanus during the war. Dr. Meltzer held the rank of major in the Medical Officers Reserve Corps. He was a member of many medical societies in this country and in Europe, and had been former president of several, including the Association of American Physicians. He was the author of more than two hundred monographs.

Announcement has been made of the death of Dr. Manuel C. Barrios, professor of physiology and of legal medicine at the University of Lima, Peru. Dr. Barrios organized the public health service and founded the National Academy, while a member of the National Cabinet.

Dr. J. P. Morat, formerly professor of physiology at Lyons, has died at the age of seventy-five years.

Dr. Edwin Cyrus Thorn died at his home in Deerfield, November 12, 1920, suddenly, after cranking his car, at the age of 46. The son of Edwin C., and Carrie Lawson Thorne, he was born at Brattleboro, Vermont, was educated at the schools there, and was graduated in medicine at the Baltimore Medical College in 1898. The following year he joined the Massachusetts Medical Society and settled in Deerfield. He is survived by his widow, Luanna Franklin Thorn, and by four sons and two daughters.

Dr. Peter John Conroy of Everett, died at Randolph, N. H., where he had gone to recuperate from a severe cold, November 27, 1920, aged sixty-five years. He was a native of Maine and a graduate of the Medical Department of the University of Vermont in 1882. After taking many courses in surgery, he settled in Everett in 1895, and had a large practice, largely surgical. He was a member of the Massachusetts Medical Society and of the American Medical Association.

Dr. Angelo Orin Squier died at his home in Springfield, November 25, 1920, at the age of sixty-six. He was born in Westfield, Mass., and was a graduate of the Long Island College Hospital in 1876. He practised in North Wilbraham, joining the Massachusetts Medical Society from that town in 1879. Subsequently he lived in Palmer, before taking up his permanent residence in Springfield. He was a charter member of the Eastern Hampden Medical Association and was on the staff of the old Hampden Hospital, now closed, besides being a member of the Springfield Academy of Medicine and the American Medical Association. Dr. Squier had suffered from heart disease for a few weeks and was thought to be improving when his death occurred suddenly He was one of the first in Springfield to make use of the automobile, when it was a novelty. He is survived by his widow and by one brother, Fred P. Squier, an attorney, of Springfield.

Stephen William Hayes, M.D., a Fellow of the Massachusetts Medical Society, died at his home in New Bedford, November 2, 1920, at the age of 72. He was born in County Cork, Ireland, July 24, 1848, the son of William and Mary Hayes. His early education was received at the New Bedford High School; he was graduated from the Harvard Medical School in 1870, joined the Massachusetts Medical Society the same year, and settled in New Bedford. He had been physician to St. John's Hospital. On September 16, 1882, Dr. Hayes married Mary G. McCloskey at Woonsocket, R. I.; she died the following year, leaving one child, who is now Mrs. Chrysostom J. Leary of New Bedford. On June 6, 1917, Dr. Hayes married Margaret A. Nolan, who survives him.

Dr. Isadore Dyer, Dean of the Medical School of Tulane University, known for his work on leprosy and malignant skin diseases, died at his home in New Orleans, on October 12.

Dr. Alphonse François Milot, a Fellow of the Massachusetts Medical Society, died at his home in Taunton, of hypostatic pneumonia and chronic endocarditis, November 6, 1920, at the age of 58 years.

He was born in St. Leon, Quebec, August 14, 1862, the son of Leonard and Marie Anne (Paille) Milot; his education was at Three Rivers Seminary, Quebec, and at Baltimore Medical College, where he received an M.D. in 1893, settling in Taunton the same year. He is survived by his widow, who was Agnes Barre, of Fall River, and by one daughter.

Dr. Frank Joseph Plummer died at the Peter Bent Brigham Hospital, Roxbury, December 2, 1920, of Bright's disease, aged 64 years.

The son of William G. and Josephine Plummer, he was born in Charlestown, Mass. His medical degree was obtained at the Baltimore Medical College in 1896. He settled in Malden and joined the Massachusetts Medical Society the same year. He was also a member of the Malden Medical Society and the American Medical Association. His wife died in 1906. He is survived by three daughters.

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Address.

THE DIFFERENTIAL DIAGNOSIS OF TUBERCULOSIS.*

BY E. O. OTIS, M.D., BOSTON.

"WE are missing tuberculosis ten times more often," says Dr. Pottinger,[1] than we are diagnosing other diseases as tuberculosis," and with this statement I think we would all agree. I might even go farther and say that if one can make a fairly good diagnosis of pulmonary tuberculosis he will not often have occasion to reproach himself for having diagnosed a case of non-pulmonary tuberculosis for one of that disease. Still there are, in the experience of all of us, diseases and conditions occurring which closely simulate pulmonary tuberculosis but which have a different etiology—diseases which are caused by other micro-organisms than that of the tubercle bacillus. This fact was strikingly illustrated in the recent war; for example, after a little more than a year of the war Professor Landouzy announced that already 86,000 men had been discharged from the French Army on account of tuberculosis, while later Major Rist declared that when the diagnosis was better made, there was only one-fifth of this number that were positively tuberculous.[2]

Elliott, speaking for Canada, says: "There is no doubt but that 60 to 80 per cent. of the cases returned from overseas as tuberculosis suspects must be classified as not suffering from tuberculosis." It must be borne in mind that the conditions of war compelled hurried examinations, and there was no opportunity for further observation, so that when there was doubt, tuberculosis was doubtless given the advantage of the doubt.

It is a serious matter, moreover, to pronounce a man tuberculous, for in the present state of public opinion, the disease is considered far more contagious than we, as physicians, know it is, and if a man is once diagnosed as tuberculous he is seriously handicapped in earning his living and indeed in his social relations, for with many laymen it is, "Once tuberculous, always tuberculous." While trying, therefore, to avoid the mistakes of a wrong diagnosis of tuberculosis when it does not exist, we must bear in mind that the tendency is in the other direction, that is, to fail to detect the presence and activity of the infection when it does exist. The sins of omission are far more than those of commission.

Unless one obtains fairly plain and clear evidence of active tuberculous disease he either has to consider other diseases of the lungs or of other organs, or keep his patient under observation until he obtains more evidence. To send a patient to a sanatorium or put him under treatment and disrupt the course of his life on a suspicion is hardly a sound medical procedure, and yet any sanatorium physician will tell us that this is repeatedly done. One may answer that the open-air treatment will do him good anyway, even if he has no active disease, but the stigma of tuberculosis is upon him and he is taking the place of someone who is really tuberculous and who, in consequence of waiting, may lose his best chance of an arrest. If in doubt, keep your patient under observation and treat his general condition according to the existing symptoms, but be very sure that the doubt is fully justified.

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* Read at the State Clinic for Physicians, Fairfield, Maine, August 3, 1920.

Before taking up the subject proper of differential diagnosis, and as preliminary to it, I should like to ask your forbearance for a moment while I briefly go over the essential facts which we must have in order to make a positive or practically positive diagnosis of pulmonary tuberculosis. In the first place, a positive sputum makes it, and we occasionally get a positive sputum when there are no definite physical signs. We are told, however, and rightly, that we must not wait for a positive sputum in making an early diagnosis. We are therefore to depend upon the symptoms and physical signs. Those of us who examined soldiers for tuberculosis in the late war were obliged to depend almost exclusively upon the physical signs, such was the rapidity with which the examinations had to be made. We were told that the only trustworthy sign of activity of apical tuberculosis was the presence of persistent moist râles, and when these were found it was a cause for rejection. In civil life, however, we have more time to go over our cases carefully, and a thorough examination requires very considerable time.

In the diagnosis of an early case we have, as we know, to depend largely upon symptoms, for physical signs may be and often are slight or indefinite. As Lawrason Brown says in his aphorisms, "Symptoms are a better and more accurate guide to activity than physical signs." We all know the telltale symptoms:—a slight but lingering cough; tachycardia; slight but persistent rise in temperature; loss of weight and strength; anaemia; slight dyspnoea on exertion; and not infrequently slight hemoptysis with many other suggestive symptoms. When all of these or the more characteristic ones are present we can with confidence make a fairly certain diagnosis of tuberculosis, for they indicate constitutional toxaemia. Any physician, I believe, if he will take the time and pains to carefully elicit and evaluate the symptoms, can generally make a fairly accurate diagnosis of early tuberculosis, whether or not he finds bacilli in the sputum, and whether or not he finds definite physical signs. The difficulty often is that the physician does not have the courage to base his diagnosis upon well marked symptoms alone, but wants it corroborated by definite physical signs or disregarding the study of the symptoms, bases his diagnosis upon the physical signs or lack of them, as we did in the Army.

As to physical signs, much can often be learned from inspection and palpation, and when it comes to percussion and auscultation the detection of râles after cough is and will always remain "the most important procedure in the detection of physical signs of early tuberculosis." Of course I do not mean to say that percussion differences and abnormal respiratory sounds are not also to be looked for and taken into account when we can be sure of them, but slight or doubtful variations in percussion and auscultation are often of uncertain determination and do not lead us to any certain conclusion. As the disease progresses, more definite physical signs appear and it is mainly in the more advanced stages of the disease that a resemblance to other non-tuberculous cases occurs, and here comes in our differential diagnosis. It is true, however, that not only the symptoms in these non-tuberculous cases also resemble those of early tuberculosis; but also similar physical signs, especially râles, may occasionally be found in the apex of one or both lungs.

In the majority of non-tuberculous diseases of the lungs, however, the physical signs are in the *middle* or *lower* lobes, and when found in these localities, with no discoverable disease in the apex, they almost invariably do *not* mean pulmonary tuberculosis.

Furthermore, when, on repeated examination at intervals, no tubercle bacilli are found, we can conclude with assurance that the disease is not tuberculosis, whatever the physical signs may be. "In most of these cases which simulate pulmonary tuberculosis," as Ash says,[3] "we must bear in mind that we are dealing with types of cases that are confused with those in the advanced stages of tuberculosis, in which it is very unlikely to be overlooked, and that we are not considering the early stages of the disease in which the tendency is to err in the other direction."

Of the conditions and diseases which may be mistaken for pulmonary tuberculosis, and which more or less simulate them, we have the following:

Conditions and diseases which may be mistaken for pulmonary tuberculosis:

1. Diseases of the Upper Respiratory Tract.
2. Pulmonary Diseases.
3. Influenza, Collapse.
4. Bronchitis, Asthma.
5. Bronchiectasis.
6. Empyema, Abscess, Gangrene.
7. Cardiac Lesions.
8. Diseases of the Pleura.
9. Cancer of the Lungs.
10. Actinomycosis.
11. Aortic Aneurysm.
12. Syphilis of the Lungs.
13. Anaemia, Neurasthenia, Dyspepsia, Anorexia.
14. Hyperthyroidism.

1. *Diseases of the Upper Respiratory Tract.* In a suspected case of early tuberculosis always examine the upper respiratory passages. Fishberg declares that in his experience "the most common pathological conditions mistaken for tuberculosis are diseases of the upper respiratory tract."[4] We may find the cause of the symptoms in a chronic pharyngitis, adenoids, enlarged or diseased tonsils, or in some of the nasal sinuses. Patients suffering from such conditions often have a chronic cough with mucoid or mucopurulent expectoration which at times may be blood streaked. I have had such cases come to me in great alarm because they have seen a little blood in the sputum. If an acute condition intervenes, such as coryza or tracheo-bronchitis, we may have a rise of temperature, loss of weight and strength, etc. There are no really definite physical signs, although we may think we find some slight impairment of resonance and modification of respiration in an apex, especially in the right apex, where physiologically these differences occur. The differentiation of these upper respiratory conditions from tuberculosis depends upon the facts that there are no toxic constitutional symptoms such as fever, tachycardia, loss of weight, strength, etc., and a negative sputum. The cough, moreover, is different in the nasopharyngeal diseases. It is likely to be more pronounced and may have lasted for years. Another characteristic is the raising of a little sputum often inspissated in the morning. "No patient," says Fishberg,[5] "should be pronounced sick with phthisis unless there are found distinct signs of an apical lesion with positive sputum, when the pulse and temperature are normal, when he states he has been 'subject to colds' for many years and shows pathological changes in the nose and throat."

Elliott[6] speaks of a group of cases in which the cough, sputum, and pulmonary signs are secondary to a focus about the teeth and which clear up under appropriate dental treatment.

2. *Pulmonary Diseases.* Of the two acute infections of the lungs, bronchopneumonia, and lobar pneumonia, either may give the classical picture of the simple disease, while both may be the beginning of an acute tuberculosis. Time alone can differentiate. If resolution does not take place and the acute symptoms continue indefinitely we shall sooner or later obtain evidence of destructive processes and tubercle bacilli in the sputum. We may have delayed resolution with some of the symptoms and physical signs which would suggest tuberculosis, and in a more or less advanced stage. Here again, however, the physical signs are in the base and there are no tubercle bacilli in the sputum.

Another type of pulmonary disease which may be mistaken for tuberculosis is what has been called a sub-acute or avirulent lobar pneumonia beginning with what is described by the patient as a "cold settling upon the lungs." After a few days of acute symptoms the patient recovers but the physical signs in one or the other lower lobes may persist for a considerable time together with the cough and sputum. The physical signs, however, are at the base and the sputum is negative.

3. *Influenza—Collapse Induration of Apex.* (Fishberg's nomenclature) *resulting from nasal obstruction, adenoids or enlarged tonsils.* To influenza, on the one hand, is often attributed the beginning of an active tuberculosis, where-

as in reality it was not influenza at all but an acute outbreak of a latent tuberculous process. On the other hand we may have an apical localized bronchitis, which Fishberg calls "apical catarrh," as the result of a genuine influenza attack. In both conditions we have cough with expectoration, debility, anaemia, loss of weight, etc., and the physical signs may be similar, if the influenza process is located at an apex. There are râles, impaired resonance, and there may be (in influenza) changes in the voice and breath sounds.

The sputum, however, is purulent and constantly free from tubercle bacilli in the true influenza cases, and the constitutional symptoms are not as marked or progressive as in tuberculosis. The tachycardia and fever are also absent. Recovery, moreover, takes place in a comparatively short time. These cases of influenzal catarrh are often very puzzling and only time and prolonged observation will lead one to a positive diagnosis in some of them.

In cases of so-called *collapse induration* from the causes enumerated above, namely: occluded nasal pássages and enlarged tonsils, we may have physical signs in the apex of the lung much like those of a tuberculous lesion, and a persistent cough. There are no constitutional symptoms, however; the sputum is negative; the patient is well nourished; and the general appearance is not that of a tuberculous individual. This leads me again to repeat that in the examination of suspected cases a careful exploration of the upper respiratory tract should always be made. If the diagnosis of tuberculosis is made, it is of the highest importance, in successful treatment, that the upper respiratory tract should be fully patent, permitting free respiration.

4. *Bronchitis—Asthma.* Many a case of early tuberculosis has lost its best chance of recovery by being called "only bronchial," because the diagnosis was made upon a persistent cough without duly considering all the symptoms.

In bronchitis, of course, the physical signs are usually bilateral, although I have more than once found localized râles at one or the other base, which I regarded as a localized bronchitis and which have been taken to be tuberculosis. In bronchitis, especially chronic bronchitis, there is no impairment of resonance. The respiration is fairly full, although it may be harsh: and the râles, especially the moist ones, are generally confined to the base. The general condition of the patient is good, and the sputum is tubercle bacilli free.

Many chronic bronchitics have coughed and expectorated for years, and still remain in good health, without any of the usual constitutional symptoms of tuberculosis. One must bear in mind, however, that a definite tuberculous lesion may exist in conjunction with a chronic bronchitis. Not infrequently a case of early tuberculosis may refer the beginning of his trouble to a *cold*, whereas it was not a cold but a symptom of the activity of his tuberculosis.

Asthma. The association of asthma and tuberculosis is rare. I do not recall but one case. One can hardly fail to make a diagnosis of the former, though a tuberculous fibroid condition may give attacks of dyspnoea which may be mistaken for asthma. In such cases the differential diagnosis is usually not difficult. The history is different. In the tuberculous cases the asthmatic symptoms are not typical. There is debility and emaciation. The sputum may be positive and we will probably detect localized signs at the apices. It should not be forgotten, however, that the two diseases may be associated.

5. *Bronchiectasis.* In my experience bronchiectasis is far more common than is supposed or diagnosed. And it may be, and is not infrequently, mistaken for tuberculosis, and in consequence the sufferer may be treated even for years as a case of advanced tuberculosis. Bronchiectasis may involve a good part of the lung: there may be one or more discoverable cavities, and we may have a cavity in the apex, as I have seen. The physical signs are those of an advanced tuberculosis, and there is often hemoptysis. What differentiates bronchiectasis from tuberculosis is that there is never any tubercle bacilli in the sputum. The disease is of long duration, often with no very great deterioration of the general health. The cough is paroxysmal, with a large amount of sputum which may be fetid. The pulse is normal and so is the temperature, in the majority of cases. In brief, the bronchiectatic patient does not present the general appearance of a far advanced case of tuberculosis, with extensive lung involvement, such as may be found in bronchiectasis. He looks and says he feels in good condition. If one depended upon the physical signs alone, he would in many cases be justi-

fied in making a diagnosis of advanced tuberculosis, but the negative sputum, the history, the well-being of the patient, and the character of the cough and sputum should set him right.

Another sign of bronchiectasis, more frequently found in this condition than in tuberculosis, in my experience, is clubbed fingers.

6. *Empyema, Abscess, Gangrene.* These conditions sometimes, in their symptoms and physical signs, suggest an advanced tuberculous process, but the differential diagnosis is not difficult. In the first place the sputum is negative and the physical signs are in the middle or lower lobe. We have also the history of a previous pneumonia or a pleuritic effusion, or some acute septic process, perhaps following an operation for appendicitis, or, with abscess, following an operation of tonsillectomy with general anaesthesia, or after childbirth. We have symptoms of cough, expectoration of large quantities of purulent matter, if the pus communicates with a bronchus; sometimes hemoptysis, intermittent fever, loss of weight, etc. The physical signs are in the middle lobe or base, as I have said, and generally give evidence of fluid, such as marked dullness, distant respiration, which may also be cavernous if the cavity is empty. In doubt an exploratory puncture may clear up the diagnosis. A blood count is also helpful, for with pus we shall get a leucocytosis.

In gangrene we have the fetid sputum which never occurs in tuberculosis, and there is generally some discoverable primary cause such as a previous operation or sepsis somewhere, or an embolus.

7. *Cardiac Lesions, giving symptoms simulating tuberculosis.* The dominating symptom in cardiac disease which suggests tuberculosis is hemoptysis, caused generally from mitral stenosis. Other suggestive symptoms are cough, emaciation, dyspnoea on exertion. On physical examination we may have evidence of oedema (râles) in the bases, or we may have apical râles. In the course of cardiac disease we may have, as we know, an infarction in which, after the acute symptoms have subsided, the physical examination may show in a localized area, with signs of consolidation, dullness, modified respiration and moist râles, occurring generally in one of the lower lobes. The evidence of cardiac disease, however, and the history will, in the majority of cases, make the diagnosis clear. In all cases of examination of the lungs, as in hemoptysis, an examination of the heart should also be made.

8. *Diseases of the Pleura.* A large majority of pleurisies with effusion, we believe, are caused by the tubercle bacillus from a pre-existing focus in the mediastinal or tracheal bronchial glands or elsewhere. Nevertheless, many of these cases of pleural tuberculosis do not subsequently develop pulmonary tuberculosis. One must be cautious, therefore, in concluding that active lung tuberculosis is present.

There are certain signs in the course of a pleuritic effusion which suggest involvement of the lungs. In the acute stage we may have râles at the apex of the affected side, perhaps due to the adhesion of the lung at the apex. Later in the period of convalescence the lung may expand imperfectly and some fluid may remain, so that we have dullness and limitation of movement due to pleural adhesion, partial collapse, a thickened pleura or fluid.

Furthermore, debility persists, and the question of tuberculosis arises, which only time may solve. The sputum, if there is any, must be repeatedly examined, and the apex of the lung carefully watched and any tendency of the basic signs to extend towards the apex or the development of fresh signs at one or both apices strongly confirm the suspicion of tuberculosis. A serous fluid throws no light on the differential diagnosis; a bloody fluid suggests either tuberculosis or cancer, and a purulent fluid is usually non-tuberculous, although I have seen at least one exception. When a definite diagnosis is impossible, the treatment of the case simply as one of chronic pleurisy will be safe, for it is essentially the same treatment as that for tuberculosis.

In not a few cases of active tuberculosis pleuritic effusion occurs, and one may for the first time see the patient in which this has happened and his attention may be directed solely to the pleuritic condition to the neglect of a careful examination of the apex. Of course in every case of pleuritic effusion the lungs in their entirety should be carefully explored. It has happened in my experience that a tuberculous lesion has been discovered in one apex while the pleuritic effusion was in the other half of the chest.

9. *Cancer of the Lungs.* Malignant disease of the lungs is not so rare in my experience as some authors consider it. For example, within about a year I have met with three cases.

Neither does it always appear to be secondary so far as one can determine. In many of the symptoms and physical signs there is a close resemblance to tuberculosis. In both conditions we may have cough, hemoptysis, pyrexia, and dyspnoea, and as time goes on, loss of weight. There may or may not be pain. The cachexia, however, differs from that of tuberculosis. The physical signs may likewise resemble those of tuberculosis. In the early stages of the disease we may have only slight dullness with diminished respiration and perhaps râles. As time goes on, the dullness becomes more marked even to flatness, and the breath sounds become more feeble or are completely absent. Pressure symptoms also show themselves, such as prominence of the veins of the chest, oedema of the arms or face, and there is dyspnoea. The lymphatic glands may also be involved.

We may also have pleuritic effusion either serous, serosanguineous or purulent. The sputum examination is always negative to tubercle bacilli.

In differentiating malignant disease from tuberculosis we have the age,—as cancer of the lungs rarely appears before 40 years,—the lack of toxic symptoms and tachycardia, the situation of the physical signs below the apex in the middle or lower lobes, absence of tubercle bacilli, and as time goes on, the extreme dullness and feeble or absent breath sounds generally without râles. The general picture of a case of carcinoma of the lungs is in its unfolding quite different from that of a case of advanced tuberculosis. In these cases the x-ray is also of service.

10. *Actinomycosis.* Actinomycosis of the lungs is rare,—I have seen it but once—and it may be mistaken for tuberculosis. In the early stages we have cough, loss of flesh, fever, etc., and in the more advanced stages, fever, tachycardia, emaciation, cough, expectoration, hemoptysis, etc.,—resembling very closely progressive tuberculosis. When the pleura is reached we have an effusion which may be purulent or muco-purulent. The location is generally in the middle or lower lobe. There may be intermissions of the acute symptoms when the patient will feel pretty well. As time goes on, we obtain lesions of other organs, abscesses, and an external swelling on the chest wall or jaw, or elsewhere, and the excessive pain. The diagnosis is of course made by demonstrating the fungus from some of the discharges. The history also in the earlier stages may aid, and if the patient has had to do with cereals, our suspicion is aroused. When pleural effusion occurs, one may have recourse to aspiration and the examination of the fluid may disclose the fungus. It is said that occasionally the upper lobe is first affected and in this case a differential diagnosis from tuberculosis is very difficult. The disease, fortunately, is very rare and in only a very small portion of the cases are the lungs primarily affected.

11. *Aortic Aneurysm.* Although this condition would appear to have such a different symptom complex from that of advanced tuberculosis as not to be confounded with it, yet it has been mistaken for that disease and the patients sent to a tuberculosis hospital. Ash, in 198 autopsies at the Boston Consumptives' Hospital, and in 353 collected from other hospitals, found seven cases of aneurysm sent in for advanced tuberculosis, and McCrae and Funk[7] of the Jefferson Hospital, Philadelphia, in a series of 1200 consecutive cases coming with a diagnosis of advanced pulmonary tuberculosis, found two cases.

The symptoms, I suppose, which suggested tuberculosis were cough, dyspnoea, hemoptysis, and dullness upon percussion. The history, symptoms and a careful physical examination would, it would seem, make clear the distinction in the vast majority of cases.

12. *Syphilis of the Lungs.* This disease is very rare and I have never, to my knowledge, seen a case. Ash, however, reports four cases from his series, and McCrae and Funk four also. The symptoms are almost exactly those of an advanced case of chronic pulmonary tuberculosis, such as cough, expectoration, loss in weight, and sometimes hemoptysis. There is lung infiltration but it is localized in the lower or middle lobe. The disease is of slow progress and does not produce such serious constitutional disturbance as would tuberculosis with the same amount of infiltration. These facts, with the history, absence of tubercle bacilli from the sputum, syphilitic lesions elsewhere, and the result of treatment aid in the differential diagnosis. The Wassermann test may also help but it is sometimes positive in tuberculosis and moreover tuberculous patients may have had syphilis. It is to be remembered that many tuberculous patients also suffer

from syphilis and many syphilitic patients contract tuberculosis.

13. *Anemia, Neurasthenia, Dyspepsia, Anorexia.* All of the above conditions may be considered the fundamental cause of the disturbance whereas they may be and not infrequently are symptoms of an incipient tuberculosis, and consequently all such cases should receive a very careful examination. Many unfortunate mistakes would be avoided if this was always done. We generally have more or less emaciation, cough, lassitude, and may have occasionally a little blood. The catamenia may also be absent or scanty. In one type of cases we have anaemia and dyspepsia, and in another, nervous phenomena, as the prominent symptoms. The temperature, however, is normal; there are no physical signs, and the cough is more pronounced and incessant. If there is sputum it is negative. Such cases must often be considered as suspects and kept under observation, and the temperature should be taken for a week. They should not, however, be sent to a sanatorium on suspicion solely, but their life regulated, and, as I have said, examined from time to time. When, on the other hand, we have these conditions—anaemia, dyspepsia, anorexia, neurasthenia—and in addition a rapid pulse, an afternoon temperature, and other evidence of toxaemia, even if we detect no definite physical signs, the only safe way is to put the patient under the regular tuberculosis treatment.

14. *Hyperthyroidism.* Hyperthyroidism not infrequent in young persons may, in its earlier or milder stages, simulate very closely in its symptoms a case of early tuberculosis and be mistaken for it. We have tachycardia, frequent sweating, lassitude, and perhaps cough and evening temperature, all of which are found in incipient tuberculosis, and hence the differential diagnosis may be difficult. There is, however, no evidence of a pulmonary lesion and no tubercle bacilli in the sputum, and, on the contrary, we may obtain the characteristic tremor and other vasomotor disturbance, together with the persistent tachycardia, which may lead us to the true diagnosis. If in doubt the patient must be kept under observation and repeated examination of the sputum made.

In order to view the question of the differential diagnosis of tuberculosis from another angle I have enumerated below the various causes of blood spitting, for this symptom always suggests tuberculosis.

Blood Spitting may be caused by:

1. Pulmonary tuberculosis.
2. May come from upper respiratory tract, epistaxis, gums, varices.
3. Gastric ulcer.
4. Cardiac; mitral stenosis.
5. Infarcts from emboli.
6. Aneurysm of aorta.
7. Bronchiectasis.
8. Abscess or gangrene of lungs.
9. Influenza.
10. Asthma, emphysema, bronchitis.
11. From oesophagus, cirrhosis of liver.
12. Acute specific fevers.
13. Cancer.
14. Arthritis.
15. From unknown cause.

Hemoptysis may be a symptom of every disease of the upper and lower respiratory tract. There are certain sounds sometimes heard on auscultation which more or less resemble râles and which may and have misled the examiner, but which arise from other causes and are not due to any pulmonary disease. Such are:

1. So-called "marginal sounds," closely simulating fine râles and heard in the lower axilla, especially the right, and only on inspiration. They are caused by the separation of the pleural surfaces as the edge of the lungs penetrates into the complemental space.

2. Muscle and joint sound, heard over the sternum, in the vicinity of the sterno-costal articulation; also along the clavicle and in many cases over the apices, the sounds being transmitted from the shoulder-joint and the sterno-clavicular joints.

3. Atelectatic râles, heard at the first deep breath or cough and not repeated, generally considered to be caused by the forced opening of atelectatic alveoli.

4. Slight dullness or rise of pitch at the right apex, with harsh or bronchovesicular respiration, heard especially above the clavicle anteriorly and to the third dorsal vertebra posteriorly with increased voice sound, are physiological and not pathological for the right apex.

In conclusion a few aphorisms:

1. Tuberculosis is much oftener missed than is non-tuberculosis diagnosed as tuberculosis.

2. Most non-tuberculous diseases of the lungs occur in the middle or lower lobes.

3. When the apex is clear only positive sputum should justify a diagnosis of tuberculosis.

4. Most non-tuberculous diseases of the lungs are comparable only with advanced tuberculous disease.

5. When tubercle bacilli are absent after repeated examinations the disease must be referred to some other cause than tuberculosis, even if the symptoms and physical signs are those of an advanced tuberculosis.

6. Do not condemn a patient as tuberculous upon a suspicion.

7. Spitting of blood may come from many causes, and alone does not justify a diagnosis of active tuberculosis.

8. The differential diagnosis of tuberculosis is sometimes difficult or impossible at the first examination, and only time and observation can finally solve the problem.

REFERENCES.

[1] Transactions of the Section of Medicine, American Medical Association, 1919.
[2] Elliott, J. B.: Transactions National Tuberculosis Association, 1918.
[3] Jour. A. M. A., 1915.
[4] Pulmonary Tuberculosis, Fishberg, 1919.
[5] *Ibid.*
[6] Transactions of the National Tuberculosis Association, 1918.
[7] The Diagnosis of Chronic Pulmonary Tuberculosis. Transactions of the Section of Medicine, American Medical Association, 1919.

Original Articles.

X-RAY DIAGNOSIS IN PHTHISIS.*

By Frederick W. O'Brien, M.D., A.B., Boston,

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In reading medical literature one is impressed with an evident disagreement between certain clinicians and roentgenologists as to the value of roentgen diagnosis in diseases of the thorax, particularly that of pulmonary tuberculosis.

The clinician declares that the roentgenologist cannot make a positive diagnosis of early pulmonary tuberculosis by x-ray examination and the latter avers the contrary, there being some truth in the opinion of each but many times neither one has been willing to look at the matter relatively.

The clinician has too often looked on the roentgenologist as an interloper in the field of medicine while on the other hand the roentgenologist has as often assumed the air of a sciolist, quite unwarranted by his finite knowledge.

Admitting the relative value of all methods of medical diagnosis as well as of knowledge in general, nevertheless the x-ray diagnosis of pulmonary disease has an absolute value which should be recognized by clinicians because of its direct relation to the human economy.

As has been stated many times and like all truisms it needs restatement, knowledge and experience are prime requisites in medical diagnosis. This is the only dogma, I would tolerate in medicine. Both the clinician and the roentgenologist must have knowledge and experience. It is quite as wrong for one as for the other to neglect any aid of proven worth that helps in arriving at a diagnosis. This does not mean at all that every laboratory or clinical method has the same relative value. Indeed no one specialized field of medicine contains all truth.

And it is particularly important that the roentgenologist be well trained in his own special field as well as having had a broad training in general medicine, otherwise his perspective is sure to be faulty and narrow. On the other hand, I do not approve of a certain ultraconservatism among clinicians that questions data that rest on conclusions which can be satisfactorily demonstrated.

Pancoast has truly said that a well trained roentgenologist can be of great help to a mediocre clinician but that a mediocre roentgenologist is of no value to anyone.

Roentgenologists worthy the name accept the fundamental principles that x-ray examination is only a means to an end, although by itself it may establish a diagnosis; that x-ray examination is not meant to supplant other tried clinical methods but to complement them, yet it may be the most valuable of any of the known methods in arriving at the desired goal. Hence, it is a necessary means and should be universally employed.

It is within the memory of us all that when Cushing first demonstrated a blood pressure apparatus in this country and very city, after he had seen it in use at Rivva Rocci's clinic, the committee appointed to investigate its merits reported adversely and among other things stated that the blood pressure could be obtained quite as well by the palpating fingers. This appears ridiculous to us now, yet the introduction of the clinical thermometer and stethoscope was subject to equally inexact criticism. So with x-ray examination of the chest. The point I would like to make is that the stethoscope, thermometer and sphygomanometer are helpful in only about 20% of the cases yet are employed almost universally.

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* Read before the Boston School Physicians' Association April 26, 1920.

Our present day surgical success owes much to team work. That is what we need in the present instance. Let us view the question with an open mind. Any valuable agency may be belittled if that is one's habit of mind. To destroy confidence in a diagnostic measure of very great value is the wrong way to penalize the "hyperenthusiastic roentgenologist."

In the examination of the chest there are two roentgen methods commonly used, *viz.*, the the screen or some especially coated photographic plate, film, or paper. The screen method, variously termed fluoroscopy or roentgenoscopy is of decided though limited value. In this method the skiagraph or shadow of the varying densities of the bodily tissues is registered and visualized upon a fluorescent screen.

This method is desirable for rapid orientation. By it one may at a glance perceive the gross topography of the lungs and may with safety make a positive or differential diagnosis of many pathological intrathoracic conditions. It is dramatic in its possibilities. When examining by the screen one may not only demonstrate fluid and its changing level but even the ripple of waves produced by coughing in hydropneumothorax and the like. One may, too, of course, see for one's self the actual freedom or limitation of the diaphragmatic excursion.

In general we favor the plate or photographic method because it gives us a permanent record for historical data and comparison besides giving us much detail that is lost in screen examination. Because of this very wealth of detail Miner of Ashevill, objects to the plate believing that it makes for confusion. No doubt, in his experienced hands screen examination is adequate, though it should not be advised routinely as the sole method. Personally we believe that if one is limited in methods then plates are to be preferred, yet we strongly feel that both screen and plate examination should be made of every patient.

Stereoscopic plates front and back may be of inestimable value. These are made, as many of you are aware, by making two separate x-ray exposures of the desired part, the first exposure to the right and the second to the left, equidistant of center, the tube shift to measure at least the interpupillary distance. The negatives are then inspected in a specially constructed view box. Simply expressed, stereoscopy gives one another dimension in estimating the value of densities. The type of tube and apparatus is immaterial provided it is adequate. Diemer and Cramer state that roentgenography of the chest cannot be satisfactorily done employing a Coolidge tube. In fact, a Coolidge tube can be used for this type of work just as well as for any other provided one uses a proper technic.

Our routine at the Boston Consumptives' Hospital calls for a careful physical examination, the results of which are charted out and forwarded to the roentgen laboratory. The patient is then examined by the fluorescent screen and the findings dictated *in cursu.* Stereoscopic or flat plates are then made accordingly as the screen examination would indicate and interpretation of the same dictated. The physical findings are then compared with the x-ray interpretation and discussed by the resident physician and house staff for final diagnosis.

Our experience compels us to the conclusion that except in particular cases one should use all data, both clinical and roentgenological, that are available.

For the correct interpretation of the fluoroscopic image or roentgenogram, definite knowledge of the distribution of the bronchi, the arteries, the veins, the lymphoid tissue, the lymph follicles and lymph nodes within the normal lung and at the hilum is absolutely necessary, for it is impossible to understand the pathological without a previous knowledge of the normal.

Anatomy. Roentgenology has stimulated the anatomical study of the lungs, the results of which study have a very definite relationship to our objective findings.

Miller has demonstrated that the so-called lung lobule of the French school is in reality made up of from 50 to 200 primary lobules.

This primary lobule he calls the anatomical unit of the lung and defines it as that area within the lung which consists of an alveolar duct, the air spaces connected with it, their blood vessels, lymphatics and nerves. The alveolar duct being the last division of the bronchial tree before it breaks up into the parenchyma of the lung.

This lung tissue when involved by certain pathological processes, as tuberculosis, appears on x-ray plates as areas of increased density more or less triangular in outline, the so-called fans described by Dunram. These triangles can be made out where the disease has not progressed too far, not only at the periphery of the lung but also in the deeper portion of the lung. The size of the triangle depends on whether one or more primary lobules are involved.

The type of tuberculosis also influences the character of the density. In advanced stages the picture is one of diffused density and often a lung will show the irregularly shaped fans in one portion and the more advanced diffused density in another portion.

The bronchial (nutrient) artery is distributed to the walls of the bronchi, the connective and the lymphoid tissue of the lung. It also supplies the lymph glands of the hilum and in those lungs which possess a thick pleura as in man it extends to the pleura and there furnishes a special blood supply to the walls of the lymphatics.

The pulmonary (functional) artery follows in all of its subdivisions the subdivision of the bronchial tree. As it arches over the main stem bronchus it comes to lie posterior (dorsal) and slightly lateral to the bronchus. Owing to this position the lateral wall of the bronchus not infrequently shows an increase of density over the mesial wall on roentgen plates.

The relation of the main venous trunk to the bronchus is different from that of the arterial trunk; it is situated anterior (ventral) and mesial to the main stem bronchus. Its course differs in each lung, being more oblique in the right lung than in the left lung.

Contrary to the pulmonary artery and its subdivisions, the subdivisions of the pulmonary veins are always situated as far from the bronchi as possible.

When one knows the relationship of artery veins and lymphatics to bronchus the reason for their visualization upon the roentgen plate is evident. Miller says the larger branches of the pulmonary artery are accompanied by two or three main lymphatics, which are so arranged that one of them lies between the artery and the bronchus. These main trunks are connected by numerous loops and there is thus formed a network with a long mesh.

The smaller divisions of the artery are as a rule, accompanied only by a single lymphatic. The bronchial lymphatics and the arterial lymphatics are in communication with each other at the place where the bronchi divide and at the distal end of the ductuli alveolares.

The lymphatics form within the walls of the bronchi a rich network which extends throughout the entire bronchial tree. This network communicates freely with the network of lymphatics which accompany the pulmonary artery, it also gives origin to lymphatics which leave the bronchi at the place where they divide and at the distal end of the ductuli alveolares accompanying the veins which arise at the same place. Beyond the ductuli alveolares no lymphatics are present in the walls of the air spaces.

While throughout the lung the lymphatics are, as a rule, destitute of valves, a valve is present at the junction of the venous (deep) lymphatics with the pleural (superficial) lymphatics. This valve opens toward the pleura.

In the pleura there is a very rich network of lymphatics which contain numerous valves. This network communicates with the deep lymphatics of the lung which extend to the pleura along the pulmonary vein, but the presence of valves at the point of union permits of lymph flow, or injection masses, in only one direction. It is only in occasional instances the valves can be forced and injection made to enter the deep lymphatics from the superficial network.

In the lymphatics of the bronchi, of the arteries, of the main venous trunks and the greater part of the pleura, the flow is toward the hilum of the lung. In the lymphatics about the veins the flow in those vessels, which are situated just beneath the pleura and communicate with the pleural network of lymphatics, may be toward the pleura. This probably explains why we may find tubercles in the pleura and none in the deeper part of the lung.

The distribution of lymphoid tissue within the lung and the relation which it bears to the air passages, the blood vessels, the lymphatics and the pleura should interest not only the pathologist, but also the clinician, for these masses frequently serve as centres to which disease processes may be conveyed through the lymph stream.

Among the larger divisions of the bronchial tree, true lymph nodes have been described and figured by a number of investigators. In each instance they were found in the angle formed by the dividing bronchi. In the normal bronchioli respiratorii and ductuli alveolares, Miller has failed to find lymph nodes or lymph follicles, but has found masses of lymphoid tissues which were situated between the muscle coat and the accompanying branch of the pulmonary artery.

In the pleura we always find a small mass of lymphoid tissue associated with the place where the radicles of the pulmonary vein unite to form a venous trunk and the lymphatics associated with the venous trunk join the pleural network of lymphatics. The amount of lymphoid tissue present at this point varies with the age of the individual and the amount of pigment present being increased in amount the older the individual and the greater the quantity of pigmentation.

Lymph nodes and lymph follicles have been described as present in the pleura. Miller does not recognize them as normal structures. They are, in his opinion, always pathological, taking their origin from the presence of irritating substances, like particles of carbon; or as hyperplasia of already existing lymphoid tissues, as in leucaemia. In the latter case pigmentation is usually absent.

General Considerations. In studying the x-ray image of fluorescent screen or plate we find it convenient to divide the thorax into three divisions, which we have been pleased to call the zones of Baetjer. The first division from the sternum to a line drawn about one inch beyond the sternal border and running down the chest, we speak of as the first zone. This takes in the edge of the mediastinum and roots of the lungs. Zone two extends from that line to the mammillary line. This comprises the central zone of the lungs. Zone three is that portion outside of the mammillary line extending to the periphery.

The large central shadow observed in the normal thorax is due to the heart and mediastinal contents. Extending out laterally are the heavy shadows caused by the large or stem bronchi. On the right side ascending and descending bronchi are distinctly seen, but on the left, due to the intervention of the cardiac shadow, the greater part of the descending bronchus is not visible. The density of these shadows increases with age, being as a rule, much heavier in the adult. Radiating from these course markings are finer lines which project into the lung field for varying distances, but do not extend normally to the surface of the lung. These markings are produced by the walls of the bronchi and the blood and lymph vessels with their contents.

In normal individuals up to thirty years of age where there has been no infection, the bronchial tree can be traced distinctly through zones 1 and 2, zone 3, as a rule, being free from the tree. This is due to the fact that the subdivisions are so fine and the fibrous sheath around them so slight that it is not sufficient to cast a shadow. Beyond thirty and especially so in old age, the chronic infections such as bronchitis, influenza and pneumococci infections have caused a certain amount of inflammatory changes in the bronchi so that the entire tree as it were, becomes thickened and in such cases can be traced completely to the periphery. This, however, may have no pathological meaning. Therefore, in the examination of an individual we have to determine what is normal for that individual. In other words, we must know his age and picture to ourselves what change would take place for that age. For example, the lung of a man of seventy might be perfectly normal when his age is taken into consideration. On the other hand, if we get the identical roentgenogram in a man of twenty it would be a pathological condition.

X-ray Classification. Chronic pulmonary tuberculosis is a disease of such varied manifestations that a classification upon any absolute basis is almost impossible. From an x-ray-point of view, cases naturally group themselves into those showing glandular involvement as in children, those showing peribronchial infiltration and those showing parenchymatous change. Any or all of these types may be found in those patients classified as incipient or moderately advanced by the standards of the National Association for the Study and Prevention of Tuberculosis.

In the glandular type of tuberculosis, whether seen in children or adults, there is a mediastinal group and a pulmonary group of glands to be considered. Barjon follows the anatomical description of de Mussy and Barety. The mediastinal group includes all the tracheo bronchial glands, that is the two pretracheo bronchial grouping, right and left and the intertracheo bronchial grouping. These glands are located in the median line between the sternum and vertebral column in relation to the important organs of the mediastinum. Hence, their x-ray images will be mediastinal images and when infected will give quite a different picture from the normal in roentgenoscopy or on the x-ray plate. Unless enlarged to such an extent that they extend beyond the median shadow they are best seen in oblique position at the level of and above the sixth rib, posteriorly. Infection of these glands alone usually follows the infectious diseases of childhood and on examination are revealed as an indefinite shadow mass in the otherwise normally clear mediastinal space, when viewed obliquely. Usually they are infected along with the pulmonary group and when greatly enlarged are a source for differential diagnosis from Hodgkin's disease, specific aortitis, dilatation of the aorta and persistent thymus in children. The latter shadow is usually rectilinear, symmetrical and homogeneous in density, whereas the shadow cast by tracheobronchial glands is irregular, scalloped and of varying density.

The hilus group is made up of many intrapulmonary peribronchial glands. These glands have a lateral location just within the second zone. Adenopathy of the hilus group, while directly related to the condition of the lung often do not give rise to any special clinical symptoms and are found with simple bronchitis, and bronchiectasis. Early tuberculosis of the hilus group with caseation without parenchymatous lesions is common in children. Infection of this group of glands is well seen in dorsal or ventral plates, appearing as discreet areas of increased density more or less well defined depending upon the stage of the pathological change, being well marked off in the caseated and calcified variety.

In some ten per cent. of cases of pulmonary tuberculosis with positive sputum the only roentgen finding is an increase in density of the bronchial tree and its associated blood and lymph supply. This is spoken of as peribronchial thickening. In ordinary bronchitis this same change is noted on roentgen examination, although in this condition the peribronchial thickening is usually bilateral, symmetrical in distribution and seldom, especially in the young, extends to the periphery. When this infiltration of the bronchial tree can be followed to the periphery and is more marked in one lobe than another the possibility of it being a tubercular change cannot be put aside lightly.

In the great majority of lung cases examined, some parenchymatous changes can be made out ranging from isolated areas of increased density consistent with conglomerate tubercles to areas of exudation, consolidation, fibrosis, cavity formation through the whole gamut of tubercular pathological changes.

Etiology. Speaking with precision, an etiological diagnosis cannot be made from the appearance on the roentgen plate or screen alone, for after all the finding of the tubercle bacillus in the sputum is the only absolute criterion of the disease. There are, however, certain changes noted in the parenchyma and seen as minute islets of increased density in selected localities (the first and second interspaces near the median triangle and toward the periphery of the lung near the angle of the scapula) which represent conglomerate tubercles such as one sees on gross section of the lung at necropsy. These roentgen findings seem pathogonomic of tuberculosis. Other lung changes noted can be due to infecting agents other than the tubercle bacillus.

Early Diagnosis. The question is often debated as to how early can a roentgen diagnosis of tuberculosis be made. If by "early" is meant the mythical pretubercular period, one must answer that it can't be done by x-ray or any other means. If by "early" is meant incipient tuberculosis according to the classification of the National Association then without question can a diagnosis be made by x-rays in competent hands. It is in this very type of case that the x-ray is most useful. Our experience repeatedly has been that cases referred as incipient tuberculosis with or without positive sputum prove on x-ray examination to be moderately advanced and even advanced as classified by the standards of the National Association.

Certain clinicians hold that a diagnosis of incipient pulmonary tuberculosis in the prebacillary stage is justified in the absence of either constitutional or local signs and symptoms. But is not such a diagnosis open to the same line of attack so persistently launched against a roentgen diagnosis?

Granted that local and constitutional signs are present and the bacillus absent, is it not true that these same signs and symptoms are found in non-tubercular chests? The clinician replies, "Ah! but experience has taught me that such local and constitutional signs are indicative of early pulmonary tuberculosis." While in the same breath he wishes to rule out of court the roentgenologist who bases his diagnosis on experience. This, I offer here, simply in the interests of clear thinking.

A plea has been made for common sense in the diagnosis of pulmonary tuberculosis. Let me plead to do away with the nonsense of categorically denying the value of roentgen diagnosis. To state without proof that the x-ray is more ornamental than useful not only displays a lamentable amount of insularity but a distressing degree of ignorance of the very positive results obtained by a score of serious-minded roentgenologists during the past decade.

Prognosis. To make a diagnosis of evidence of tubercular infection by x-ray or physical signs is one thing and to state that an individual is one of the tuberculous sick, quite another. For there is satisfactory evidence that most humans have been infected with tuberculosis in childhood when the pulmonary lesions passed unnoticed because they gave no clinical signs of their presence. However, as Hamman points out, these lesions have left a very definite mark of their visit and the lungs thus affected are structurally never the same as they were before the infection, at least one-third of all adults show persisting abnormalities, which may be detected by auscultation and percussion. The x-ray shows such abnormalities in larger number, so that when one hundred men come before us for examination we know at once that at least 70 per cent. are tubercularly infected. Also, that out of this 70 only four or five develop the disease, which strikingly illustrates the necessity of making the distinction between the tubercularly infected and the tuberculous sick, and percussion and auscultation are only two means for diagnosis and by no means the most important. The real problem is, to determine which four out of the 70 will develop the disease. The solution of this problem Hamman believes is directly proportionate to the extent of pulmonary involvement, although a history of previous attacks also has its bearings. Surely no one can gainsay that the x-ray in the great majority of instances will definitely portray the extent of the pulmonary involvement.

Roentgen ray examination will show that not all so-called incipient or moderately advanced cases have the same type of pathology and what is more important in classification and prognosis than the type of pathology present? The roentgen ray in the majority of cases reveals a more extensive lesion than is found by physical signs. Not only the extent but the x-ray appearance of the lesion is of value in prognosis. The so-called interlobar pneumothoraces which show as annular areas of increased density on the x-ray plate are often definite evidence of softening of the lung. These areas probably represent the so-called silent cavity. Their true significance was not appreciated until the careful study of Sampson, Heise and Brown. These pneumothoraces are rarely diagnosed clinically and indicate a somewhat graver prognosis. There is no doubt but that in experienced hands the question of activity may be decided by x-ray alone. Well-defined calcified areas of increased density, surely are old processes. Fibroid changes we know denote chronicity. Well walled-off cavities denote healing. Obviously a cavity partially filled with pus must denote activity, just as do hydro and pyopneumothorax.

Repeated examinations by x-rays will often determine the activity of the lesions present and so intimately affect the prognosis. This does not mean at all that constitutional signs are to be discarded. I want to emphasize again that there are definite x-ray signs that are the basis of a roentgenologist's faith and he has a right to interpret them. But one is to remember that the term "roentgen diagnosis" means only just that and nothing more. It is not always the final or correct diagnosis.

Regarding roentgen ray findings as a control of physical examination only a modicum of experience is necessary to learn soon that mediastinal shadows though dense often give no physical sign. Glands enlarged sufficiently to cast definite shadows to x-ray illumination are still quite beyond the reach of percussion and auscultation. Increased density of the bronchial tree is discoverable only when the increase is unusually marked and extends close to the surface of the lungs in the region of the apices. It is common knowledge among well-informed clinicians that patients who on physical and constitutional signs are incipient when examined by the x-ray pass on to a more advanced stage, how in some supposedly moderately advanced cases one finds cavities where physical signs gave no evidence of them. Lawrason Brown reported three cases of cavity in one week, in all of whom no physical signs whatever were present. There was proof that there were cavities by change of fluid level. Chests which give physical signs at the left apex for instance, will, on x-ray examination, show pathology of the right middle lobe. Then, too, we have become so accustomed to talking about the apices of the lungs we forget about the apices of the lobes. That is the favorite location for tuberculosis. Often the roentgenologist will find the apex of the right middle or lower lobes pathological when no physical sign is present at the apices of the lungs.

Conclusion. I have purposely avoided statistics at this meeting. We have in preparation a statistical study of cases seen at the Boston Consumptives' Hospital during the past three years. What I hope I have accomplished is, to impress you with the fact that the competent roentgenologist is justified in making a diagnosis of pulmonary tuberculosis. I have seen almost everything from specific aortitis and aneurysm to new growth of the liver, Hodgkin's disease, chronic cardiac and renal disease with secondary lung signs called tuberculosis after examination by competent internists.

Whether or not a process is tubercular is rarely decided by the x-ray alone. It is decided with still greater rarity by physical signs alone. As diagnosticians we need all signs and all symptoms, the clinical history and the laboratory findings. Let me conclude with the words of the dean of roentgenologists in this country, Dr. A. W. Crane, "Let not the consulting room of the internist, the laboratory and the x-ray room become chambers of discord. The diagnostician without the x-ray is blind, but he who is without the stethoscope and percussion are deaf. Let not the deaf argue with the blind, for such is without profit. But, let the deaf put away their deafness and the blind put away their blindness. Then will a miracle come to pass . . . . . that the art of diagnosis will have a new birth."

SAMUEL FULLER, THE PILGRIMS' DOCTOR.

By Charles H. Bangs, M.D., Boston.

"And in the end (after he had much helped others) Samuel Fuller, who was their surgeon and phisition, and had been a great help and comfort unto them" died. He was "a man godly, and forward to doo good, being much missed after his death." Such is the tribute paid by Bradford, the historian of the Pilgrims, to Samuel Fuller who came with them in the Mayflower to Plymouth in 1620 and spent the remaining thirteen years of his life in Plymouth Colony. He ministered not only to the Pilgrims and the natives, but was also called upon to render medical assistance among the Puritans as well. His home appears to have been in the present town of Kingston; but at the call of Humanity, wherever his services were needed, Samuel Fuller performed the duties of his profession from Cape Cod to Cape Ann, traversing the pathless forests and sailing the uncharted waters to take relief to the suffering. Serving the colonists constantly in his professional capacity from 1620 until his death in 1633, we believe that he fairly earned the title of First Resident Physician of New England.

His ministrations extended outside the bodily needs of the colonists for, as a deacon, he ministered to the spiritual needs of the community that was so closely associated with the church. It is evident that he endeared himself to all, both by his professional ability and by his upright life. Not only did he bear his burdens in Plymouth Colony but he was more than once called to Charlestown and Naumkeak (Salem) and to Mattapan (Dorchester) to combat epidemics in those places.

The letter of Governor Endicott to Governor Bradford testifies to the high esteem in which he was held in the Massachusetts Bay Colony. Little is known of the early life of Samuel Fuller except what we gather from the records of of the parishes of Redenhall and Wortwell in County Norfolk, England. By these records it appears that he was one of the eighteen children of Robert Fuller, butcher, to be baptized between February 18, 1564, and October 31, 1591. The date of Samuel's baptism is recorded as January 20, 1580, which shows that he was a man of middle age when he came over in the Mayflower. His wife and one child joined him by a later ship and two children were born to them in Plymouth Colony.

It may be inferred that he was one of the more prosperous of the Pilgrims since he brought with him a servant who died as they neared the land. Previous to the embarkation of the Pilgrims he was a deacon in Rev. John

Robinson's church in Leyden. That he took an active part in the Pilgrim migration is shown by a letter written June 20, 1620, to John Carver and Richard Cushman. This letter, which was signed by Samuel Fuller, William Bradford, Isaac Allerton and Ed. Winslow (in the order named), was a vigorous protest against certain proposed measures whereby "yt the marchants should have half of mens houses and lands at ye divident" etc. In this transaction Samuel Fuller was associated with those who were the ablest among the Mayflower Pilgrims and indicates that he was a man of importance in the business affairs of the organization. This is further borne out by the fact that he was the eighth signer of the Mayflower Compact, that most important American document. As a deacon in the church at Plymouth he took an active part in its affairs, and benefits are even now accruing to the church as the result of his farsightedness and devotion. His spiritual council seems to have been sought equally with his professional advice.

The following is taken from "Plymouth and the Pilgrims," by Arthur Lord:

"John Pory, on his return, in 1622, from Virginia to England, stopped for a brief visit in Plymouth. He writes the Governor that 'for the space of one whole year of the two wherein they had been there, died not one man, woman or child.' Captain John Smith, writing in 1624, says: 'The place (Plymouth) it seems is healthful for the last three years . . . . there having not one died of the first planters.' "

In 1628 and again in 1629 he went to Charlestown and Salem at the request of Governor Endicott to combat epidemics of scurvy and infectious fever which had been brought in by the newly arriving ships. Governor Endicott sent for him because there was no physician in the Massachusetts Bay Colony and because he had heard that "here was one that had some skill in yt way, & had cured divers of the scurvie, and of other diseases, by letting blood, and other means." May 11, 1629, Governor Endicott wrote to Governor Bradford:—"I acknowledge myself much bound to you for your kind love and care in sending Mr. Fuller among us."

With the ability of the physician Dr. Fuller evidently combined the skill of the diplomat, for his visit to Salem and his meeting with Governor Endicott brought a much more cordial relation between the two colonies. It also resulted in a reconciliation of much of the disagreement between them as to forms of worship, led to an acquaintance between the two Governors and eventually helped to establish the union of the Plymouth and the Massachusetts Bay Colonies under a single government.

To Mattapan (Dorchester) Samuel Fuller was called in the summer of 1630 to combat an epidemic in which he treated some twenty of the people. What may have been the nature of the epidemic we do not know. What were the merits of the treatment in the light of modern medicine we have no right to discuss. While there is nothing to indicate the source or the profoundity of his medical education, there is evidence that he practised in accordance with the standard of his times. As well may we assault the teachings of Hippocrates and Galen as to compare the work of this pioneer in medical practice in New England with the medical science of America today.

Suffice it to say, he served well the people of his day, according to the standards of his profession. He won the confidence and esteem of his associates both by his professional skill and his exemplary life. He won the love of the community which he served by his devotion to its wellbeing. "A man godly, and forward to doo good, being much missed after his death." What better epitaph need be written.

The recent years have produced only one medical service bearing any comparison to that of Samuel Fuller,—that has been the devoted sacrifice of Dr. Wilfred Grenfell in ministering to the people of Labrador. For his devotion to duty Dr. Grenfell has been honored with knighthood.

How may we honor Dr. Samuel Fuller, the Pioneer Resident Physician of New England? In this tercentenary year should we not do something worth while to perpetuate the name of the Pilgrim's doctor? No deeds of arms or thrilling romance have given him a place in poesy. No royal commission nor high office has made conspicuous his name in colonial history. Yet he who simply served should have his well deserved place in the Pilgrims' Hall of Fame at this time when the thought of the world is turned toward the struggles and the achievements of the Pilgrims. Shall it not be the privilege and the pleasure of the medical profession of this entire country, regardless of the cleavage of lines of practice, to unite in establishing a suitable memorial to Dr. Samuel Fuller, the first doctor to acquire permanent settlement on these shores?

Clinical Department.

MALIGNANT DISEASE OF THE KIDNEY WITH UNUSUAL SYMPTOMS. A REPORT OF THREE CASES.

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[From the Genito-Urinary Department of the Massachusetts General Hospital.]

From a diagnostic viewpoint malignant growths of the kidney demand the most thoughtful consideration and often present the greatest difficulties. If one is to entertain any hope of cure or even of relief, the diagnosis cannot be made too early. That such early recognition is generally impossible owing to the lack of symptoms or to their vague nature is well known. It is, therefore, desirable that any facts which might be of assistance in the elucidation of these sometimes obscure problems should be recorded.

The following cases came under my care recently at the Massachusetts General Hospital. Each teaches its lesson in the necessity for being constantly on the watch for the possibility of the existence of a renal tumor with vague or unusual symptoms.

Case 1. M. H., female, 44 years old, married, white. Seen January 3, 1920, in consultation with the West Medical service to which the patient had been admitted. F. H.—Negative. P. H.—Unimportant. P. I.—For five or six months an "all gone" feeling in the lower back, but no definite pain. Profuse night sweats during this period. No cough or fever. About one month ago dull, dragging pain began in lower back and has persisted to date. Patient was obliged to go to bed. Hematuria of slight degree and intermittent has been noticed since onset of symptoms; otherwise no unusual urinary disturbance beyond slight frequency. No nausea or vomiting; no known loss of weight. P. E.—An obese woman, evidently in some distress. Heart negative. Slight dulness in right axilla with increased voice sounds. Left lower back dull with bronchial breathing; diaphragm high on the left. Abdomen pendulous and very fat. An indefinite, tender, apparently movable mass in the left upper quadrant, where there is some muscle spasm with tenderness in the left costo-vertebral angle. Blood pressure 125 mm. systolic, 75 mm. diastolic. Afternoon temperature persistently about 101 degrees. White count ranged from 13,000 to 17,000. Renal function 35% in two hours. Blood Wassermann negative. X-ray unsatisfactory on account of obesity. Catheter specimens of bladder urine repeatedly showed much pus, a few blood cells and B. Coli. Cystoscopy showed an essentially normal bladder. Catheter passed easily to either kidney, with normal flow of clear urine from the right, of which the sediment showed a few white and red cells and motile bacilli. No urine whatever was obtained from the left side, although 15 c.c. of a solution of 25% sodium bromide could be injected into the kidney without producing colic. X-ray for pyelogram showed no shadow (again doubtless due to the unusual obesity).

My preliminary diagnosis was "probably a non-tuberculous pyonephrosis, possibly due to calculus." Operation was advised.

Operation. Oblique left lumbar incision. On opening the perinephric space a large quantity of pus poured out. Culture of this showed B. Coli. There was an extensive necrosis of perirenal fat and the kidney felt soft and distended. It was not enlarged, nodular or especially adherent or vascular. At this point the patient showed signs of collapse and the wound was therefore hastily closed with drainage.

Ten days later, the patient's condition meantime having markedly improved, a second operation was performed, this time the left kidney being removed. Pathological examination by Dr. J. H. Wright was as follows:

"Kidney shows three white tumor masses with areas of softening in them. The largest is 4 cm. in diameter."

"Microscopic examination shows the tumor to consist essentially of vacuolated epithelium-like cells, resembling those of adrenal cortex. Capillary blood vessels course among the cells. There is but little stroma. The tumor tissue is degenerated in many places, and pus cells, bacteria (some of them cocci), and degenerative products are present. Diagnosis—Hypernephroma.

The patient made a good recovery and left the hospital sixteen days after the second operation.

While it is true that in this case the cardinal symptoms of renal tumor, namely hematuria, pain and tumor, were present to a greater or less degree the picture was so definitely one of an inflammatory process that the possibility of neoplasm was lightly if at all considered. Indeed, infection as a predominating symptom in renal tumor is exceedingly rare and except for blood (which is by no means constant) the urine is often negative.

Albarran and Imbert, in their "Tumeurs du Rein," state that this phenomenon was seen by them in but two cases. They also state that one *sometimes* finds pus in the urine in the presence of renal tumor. I have no personal recollection of a similar case of infected renal tumor, nor have I come across other mention of it in the literature.

The small size and therefore comparatively short duration of the tumor in this case make the prospects of permanent cure unusually bright. But it was what one might call an accidental diagnosis, as in the absence of infection it is probable that the patient would have sought relief only after the growth had spread outside the kidney into the renal vein or the perirenal tissues.

Case 2. T. U., male, 50 years old. Entered West Medical service under the care of Dr. R. I. Lee in August, 1919. After very careful study Dr. Lee summarized the case as follows:

"A baker of 50 had influenza 11 months ago. Since then weakness, anorexia till recently, and loss of weight (40 pounds in the past year). Several attacks of abdominal pain, mostly right-sided, with diarrhea for four weeks. Negative x-rays of lungs, and gastro-intestinal tract, except for visceroptosis and glands at lung roots. Very slight, but persistent fever (never over 99 degrees), and white count of over 10,000 many times. Pulse 90-100. Slight tremor and palpable and enlarged thyroid. A few white and red cells in the urine."

I might add that the blood Wassermann was negative, blood pressure 180 mm. systolic, 120 mm. diastolic, creatinin 1.57 mgm., non-protein nitrogen 45.9 mgm., phthalein kidney test 40-45%, stools negative to guiac test, red count, 4,648,000.

Patient left the hospital in September, 1919, and was readmitted in November, 1919. Diarrhea had become more marked. Abdominal pain vague. Examination of eyes showed marked arteriosclerotic changes of retinal circulation in both sides. Enlargement of thyroid more pronounced. Abdominal examination negative. Blood pressure 135 mm systolic, 95 mm diastolic.

It will be noted that throughout this careful and prolonged observation there was but little reason for suspecting the genito-urinary tract as a source of the trouble. But being unable to account for the symptoms satisfactorily a consultation with the Genito-Urinary Department was requested.

I made a cystoscopic examination on November 19, and found a normal bladder and ureters. A catheter passed to the right kidney drew clear urine, with a negative sediment and a function of 55%. Pyelogram showed an ectopic, but otherwise normal kidney. A catheter was passed 11 cm. into the left kidney but no urine was obtained.

On November 29 another cystoscopy was done. Again a catheter was passed up the left ureter but drew no urine. Pyelogram showed marked deformity of the left renal pelvis, the injected fluid (25% sodium bromide) being scattered around in irregular masses. Careful abdominal examination showed for the first time a definite, but vague mass, apparently fixed, in the left upper quadrant. A diagnosis of malignant disease of the left kidney was made. Operation was considered to be futile.

In December, 1919, an exploratory operation was performed by Dr. C. A. Porter, as there were certain features of the case which suggested pancreatic tumor.

The left kidney was found to be hard, fixed, nodular, moderately large, with metastases in the liver and the tail of the pancreas. No definite tumor formation in the kidney as in hypernephroma; probably adenocarcinoma. The patient recovered from the operation and left the hospital December 29, 1919.

Here again is a case lacking the usual text-book symptoms of renal tumor. The pain was uncharacteristic, there was no gross hematuria, and not always microscopic blood. The enlarged kidney was overlooked entirely at first, and but vaguely felt even when attention was focused upon it. After finding many things wrong with the patient, none of them, however, the primary source of trouble, the medical service asked for a urological consultation as a last resort. It is hard to see how diagnosis could have been made much earlier unless one should go to the extent of including a complete investigation of the genito-urinary tract as part of every routine examination.

Case 3. A. M., male, 58, white. Admitted to the Genito-Urinary service October 7, 1919, for hematuria, with a diagnosis (by his doctor) of "Malignant disease of the bladder." P. H.—For the past three or four years has had indigestion and vomiting at times. None lately. Five months ago he began to have pains in the back, at times severe enough to keep him in bed. Pain mostly on the right side and in the hip and knee. Joints never swollen or red. Pain in the back grew less and less, and pain in the knee increased till he finally went to a hospital where an x-ray was taken which showed "thickness in his bones." A plaster spica was applied with some relief. P. I.—Three days ago he began to have bloody urine. No previous urinary symptoms. Occasional nocturia, no urgency or frequency. Thinks he has lost ten to twelve pounds in the past three months. P. E.—Fairly developed and nourished. Heart and lungs negative. Slight tenderness over lower spine. Abdomen lax, tympanitic, no masses or tenderness. No organs felt. Genitals negative. Considerable tenderness over great trochanter on the right. Reflexes normal. Prostate soft, slightly large. Blood pressure 180 mm. systolic, 100 mm. diastolic. X-rays of genito-urinary tract negative. Urine very, bloody, sediment showed nothing but blood. Soft catheter passed easily to the bladder withdrawing about eight ounces bloody urine.

Catheter drainage for 48 hours with cessation of hematuria.

On October 10 cystoscopy under local anesthesia was attempted but owing to marked irritability of the urethra nothing was accomplished.

On October 14, the urine meantime being clear, spinal anesthesia was given for another cystoscopic examination, in order to determine the source of bleeding. Anesthesia was given easily with the patient sitting on a flat table. The patient was then lifted to an operating table in order that he might be put in the lithotomy position. After this move it was noted that the right femur was fractured in its upper third, a mishap which had occurred without the knowledge of the patient or of those in attendance. In spite of this and in the belief that thorough investigation was important, cystoscopy was performed and the ureters catheterized. There was a normal jet from each kidney. The sediment of the right urine (except for a little blood) was entirely negative and the phthalein test (intravenous) showed an appearance time of six minutes with a function of 40%. The sediment of the left urine showed much blood and a few white cells. Phthalein appeared in six minutes with a function of 35%. The exigencies of the case made a pyelogram at that time seem unwise. Subsequent investigation by x-ray showed that almost the entire right femur was replaced by new growth.

The patient was transferred to the West Surgical service where after some deliberation a hip-joint amputation was performed from which the patient made a good recovery. Pathological examination showed almost the entire shaft of the femur to be invaded by necrotic new growth, which on microscopic examination proved to be adenocarcinoma.

In this case the presence of sudden, unprovoked and "total" hematuria, together with some loss of weight in a man past middle life naturally aroused a suspicion of malignant disease, but whether of kidney or bladder could not be told without cystoscopy. The subjective and objective leg symptoms did not, however, occur to anyone as being due to a possible metastasis.

The fracture of the leg while absolutely unavoidable was none the less a most unfortunate affair, and one which might very properly put the surgeon in an awkward position. While one would undoubtedly prefer to make his diagnoses in a different way, this accident furnished the diagnosis at once, not only as to malignant disease, but also localized it to the kidney as malignant renal tumors seem to have a predilection for the long bones.

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REPORT OF A CASE OF ACUTE ENCEPHALOMYELITIS WITH AUTOPSY.

By Howard Osgood, M.D., Buffalo, N. Y.

The following case of "encephalitis lethargica" is of interest because it was under continuous observation from onset until the fatal outcome, and because the diagnosis, obscure in the beginning, was corroborated by post-mortem examination.

The patient, male, aged 58, white, a broker, was seen for the first time at his home in vicinity of Boston on May 1, 1920.

History. Family History—Father died, cause unknown. Mother died of cancer. Patient has been married twice. One child by first wife is living and well. First wife divorced. Second wife living and well; no children. Past History—In early manhood, the patient went West for a short period for his health. He is said to have had "ambulatory typhoid" many years ago after his return from the West. Since then he has had no serious illness. He has not had influenza. He has taken very good care of his health, spending much of his leisure out of doors. During the past winter he has regularly frequented the gymnasium. For two years he has felt below par, without definite symptoms; circumstances of his life have not been very happy. He has not been troubled with headaches, colds or sore throat. No *cardio-respiratory* symptoms. Gastro-intestinal—For the past two years or so once or twice a month, he has had a sense of fulness immediately after eating, especially when tired at night, relieved by induced vomiting. Vomitus which is not increased in amount, consists of food just eaten. No pain or hematemesis. Unless he is careful of his diet, the symptoms are aggravated. For the past few weeks, this fulness and vomiting have occurred two or three times a week. He is habitually troubled with constipation and flatulence; bowels regulated by a mild laxative four to five times a week. No diarrhea; no bloody, tarry or clay-colored stools. Genito-urinary—Micturition $\frac{D\text{-}4\text{-}5}{N\text{-}1}$ Nocturia for several years. No other symptoms referable to the genito-urinary tract. Questioning elicits no symptoms in the past referable to the *neuromuscular* system. He is, however, reticent by nature, and has worried a good deal about his health. For the past year he has shown a tendency to doze off in the evenings, and has gone to bed early. He has been under considerable strain from worry and long hours at his business for four or five months, and has been troubled with insomnia. Skin—Face and hands tanned from exposure; never any jaundice. Weight—Best, 185 pounds 25 years ago; present, 150 pounds, stripped. Habits—Rarely tea or coffee; rarely tobacco. No alcohol or drugs. Present Illness—The patient gives April 30 as date of onset. For several weeks preceding he had felt tired and dull. Two weeks previously the author chanced to be present at a small dinner with him. At that time, he appeared tired and pale and unusually quiet, jokingly apologizing to his hostess for his lack of conversation. About the same time he had remarked to a business associate at his usual lunching place that "he could go to sleep in his chair."

On April 30, patient felt very tired at work and had no appetite. He came home in the evening feeling feverish. Was restless and vomited once or twice that night. He did not believe that he had had fever before the day of onset. He had considerable discomfort from gas in the bowels and complained of "deep breathing" at night which tired him. He stayed in bed the next day, eating very little. Vomited again three or four times without effort, vomitus chiefly bile. There was a slight nosebleed once after vomiting. No headache, abdominal pain, respiratory or genito-urinary symptoms.

Physical Examination, May 1, 1920—A well developed and nourished man lying quietly in bed, not appearing very ill, conscious and rational. Complains of "gas in the bowels." Hair iron gray and plentiful. Skin of face, neck and hands brown and weatherbeaten, rather sallow. Sinuses—No tenderness. Eyes—conjunctivae pale; no jaundice. External ocular movements normal, no nystagmus. Pupils round, right slightly larger than left, both react promptly to light. Nose—No obstruction or discharge. Teeth—Good. Tongue—Clean; protrudes in midline without tremor. Throat—Slight general redness. Tonsils—Negative. Lymphnodes—Cervical, epitrochlear and axillary not enlarged. Heart — Size normal; sounds rather faint. $A^2 > P^2$. No murmurs. Blood vessels not palpably sclerosed. Lungs negative throughout. Abdomen flat, soft, hypertympanitic. Liver edge just felt on deep inspiration; not tender. Gall-bladder not felt, but some local voluntary rigidity; Spleen and kidneys not felt. No masses or tenderness. Costo-vertebral angles negative to palpation. Genitalia not examined. Reflexes—Knee and ankle jerks active and equal. No Babinski. No neck sign. Skin, clear; no rose spots. Blood pressure $\frac{144}{80}$. Blood smear — Polymorphonuclear neutrophiles, 60%; small lymphocytes, 28%; large lymphocytes, 8%; large mononuclears, 4%; eosinophiles, mast cells and myelocytes, 0; reds and platelets normal. Urine (morning specimen)—Amber, slightly cloudy. Acid, Sp. Gr. 1017. Alb. ? trace (heat). Sugar ± (Benedict). Diacetic and Bile—0. Sediment—Much thin mucoid, prostatic secretion. Many minute oblong crystals. Few cylindroids. One coarse granular cast seen. Few epithelial cells. No pus or blood. Stained smear negative.

Provisional diagnosis in absence of definite findings—A mild acute gastro-enteritis of unknown origin. Treatment—Castor oil, then milk of magnesia, soft solids and bed.

Course of Disease—During the next week the temperature ranged from 99 in the morning to 102 in the afternoon, subsiding to 99 on the afternoon of May 6. The patient showed a slight tendency to somnolence and complained of lack of appetite; several nosebleeds. Further physical examination disclosed a large, firm, non-tender prostate; no rigidity of neck. Otherwise there seemed to be an improvement. White count, 5,600. Blood culture, stool culture, Widal and blood Wassermann were all negative (Dr. F. B. Mallory's laboratory).

Acute retention of urine developed on May 7, with considerable spasmodic pain in bladder, relieved by morphia. He was seen in consultation by Dr. H. H. Crabtree and was removed to the New England Baptist Hospital where a suprapubic cystotomy was done under local anesthesia, preliminary to prostatectomy, the acute illness apparently having subsided. During the operation the patient evinced remarkably little reaction nervously. Before the operation, it was noted that the patient was a little deliberate in his gait, especially when turning, but at the time it was attributed to the effects of the morphia. From that time on, however, he became distinctly more dull.

After the operation there was almost complete suppression of urine for 36 hours, a rise of temperature, and great drowsiness, later followed by satisfactory diuresis. Blood pressure $\frac{145}{90}$. Urine—Cloudy, alkaline, very large trace of albumen (heat), no sugar or diacetic acid. Blood chemical examination (May 10)—Urea nitrogen 13.98 mgm. per 100 c.c.; non-protein nitrogen 41.5 mgm. per 100 c.c.; chlorides 497 mgm. per 100 c.c.

During the next few days the albumen diminished; no casts were seen. Irregular fever persisted, however, with pulse between 100-120; respiration 25. The patient was very drowsy at times during the day, lying semi-recumbent with little effort to change position. He complained of insomnia at night; his nurse reported that he slept only in naps. There was obstinate distention, temporarily relieved by enemata and rectal tube. Phenolsulphonephthalein test (May 12)—Appearance time 13 min.; first hour, 17%; second hour, 25%; total 42%.

Daily notes are given below as they show the progress of the disease better than a summary. May 13—Not taking nourishment well. Patient has begun to have drenching sweats several times a day. Night nurse reports that he "jumps" frequently in his sleep. White count, 10,200. P. E.—Heart and lungs negative. Abdomen moderately distended; wound clean. On this day ptosis of left eyelid developed; no palsy of other ocular muscles or of face or tongue. Doubtful Babinski on left; slight weakness in lifting left leg from bed. Deep reflexes normal. Ophthalmoscopic examination, atropine dilation: right eye, disk sharp, vessels normal; retina negative as far as seen. Left eye, some refractive error distorts disk, which seems normal; retina negative.

May 14—Patient slightly delirious; breathing regular, 28 per minute, but almost hyperpnoeic in character, not periodic; intervals of tachypnoea. In addition to pareses noted before there is weakness of left frontalis muscle, expressionless face and drooping of lower jaw. Fine muscular twitchings in calves and biceps, almost fibrillary in character. Slowness and uncertainty of voluntary movements; slight bilateral ataxia in heel to shin and finger to nose tests. Questionable clonus on left. No Babinski. Fingers are held straight, and flexed at metacarpo-phalangeal joints, thumbs approximated to side of index finger. Feet adducted and plantar-flexed at ankle; toes flexed at metatarso-phalangeal joints, interphalangeal joints straight; big toes slightly adducted and straight; Chvostek's and Trousseau's signs absent. General mild rigidity of muscles of extremities. Resistance to extension of legs at knee with thigh flexed, but no pain. Sensation tested roughly with hand and sharp point normal. Lumbar puncture; pressure 8-12 c.m., fluid crystal clear; cells 4-6 per cu. m.m. Globulin 0, Wassermann 0; no clot formed over night in ice-box.

Seen in consultation by Dr. E. W. Taylor. At this time patient showed unexplained stupor, probable ptosis, apparent external strabismus, blurred fundus with no hemorrhages, nasal side of both disks indistinct, a probable right Babinski; other reflexes normal; weakness of right side of face. Dr. Taylor made a probable diagnosis of encephalitis lethargica.

May 15—White count 10,200. Blood pressure $\frac{130}{95}$. Blood culture sterile. Blood chemical examination (taken two hours after a cup of coffee with cream and sugar and a half hour after 8 ounces of milk)—Urea nitrogen 17.71 mgm., non-protein nitrogen 42 mgm., blood sugar .116 mgm., chlorides 562 mgm. per 100 c.c. CO_2 capacity 42.

Patient bright in the morning, but lapses into stupor during day; intelligent response when roused. Ear drums negative. Ptosis now bilateral, convergence weak. Tongue not fully protruded in mid-line; tremulous. Voluntary movements deliberate with coarse intention tremor.

May 16—White count, 23,000; temperature, pulse, and respiration climbing; perspiring freely. Rarely makes spontaneous remark. Pupils dilated, oval, fixed (three days after atropine in the eyes). Fundi—Right disk slightly more blurred than before. Heart dilated to left; rate 140 per minute. Lungs—Fine consonating râles at left base, faint dulness at right base. Acute decubitus developing over sacrum and right great trochanter. Swallows liquids fairly well but holds solid food in mouth a long time before swallowing. Food accumulates between teeth and cheeks.

May 17—Patient very stuporous. Replies to direct questions rationally but briefly. Coarse clonic tremor appears in the limbs when disturbed, which lasts for several minutes. Pupils as before, right larger than left. Neck stiff. Knees resist extension without pain. When roused, he can differentiate position of toes when placed up or down. Small patch suggestive of pneumonia at right base. Rectal examination by Dr. Crabtree showed prostate firm and smaller than before operation; not tender. No evidence of any inflammatory process anywhere about rectum. Epididymes normal.

May 18—Temperature, pulse, and respiration higher. Definite bronchopneumonia at left base. Loose cough but unable to raise sputum on account of weakness. Tremor as before, more marked in legs than in arms. Tongue protruded in midline with tremor; patient can open jaw about 2 cm., no spasm of masseters. Unsustained bilateral clonus; general muscular rigidity increased; grip weaker, right feebler than left. Neck somewhat stiff but not painful; positive Kernig without pain. Stupor more continuous; profound at times during the night with deep breathing; roused with greater difficulty; replies in monosyllables but understands questions. Considerable bloody oozing from bladder.

X-ray pictures taken in bed showed patch of broncho-pneumonia at right base; kidneys, ureters and bladder negative (Dr. J. R. Healy).

After disturbance for x-rays there was tremor of the lips and jaws, and the respirations rose to 50 per min. Lumbar puncture (12 hours ante-mortem): 15 c.c. crystal clear fluid; pressure 12 cm. Cells 3 to 4 per cu. m.m. Globulin positive (one plus). No clot after 24 hours in the ice-box. Gold sol 001100000. White count on blood, 32,200. Reds slightly achromia; platelets normal. There were many polymorph. neutrophiles two to

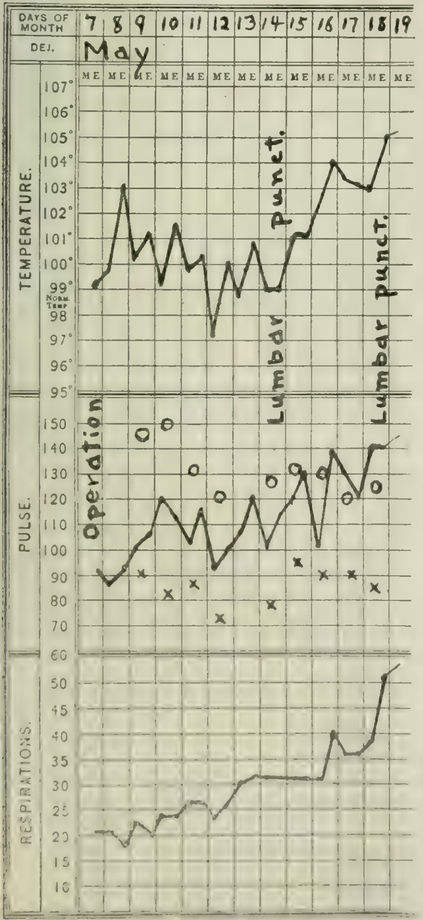
Differential:

Polymorph. neutrophiles, normal 77.7%	90.0%
Large granular neutrophiles .. 13.2%	
Small lymphocytes	3.6%
Large lymphocytes	1.8%
Large mononuclears	3.6%
Eosinophiles, masts, myelocytes, and blasts	0.0

three times the usual size, with lobulated nucleus and many rather large neutrophilic and basophilic granules. No phagocytosis seen.

Atropine gr. $\frac{1}{150}$ subcut. at 5.15 P.M. and again 8 hours later.

May 19—Patient failing rapidly. Recognized relative and said "Good morning." Respirations rapid, regular, but gasping; very little moisture in trachea. Quality of pulse varied but remained fairly strong. Patient recognized wife an hour before death, then became unconscious. Respiration became more gasping and shallower; ceased at 9.53 A.M. The heart stopped 3-4 minutes later after becoming absolutely irregular.



°Systolic blood pressure.
*Diastolic blood pressure.
Last four days, temperature taken per rectum.

Autopsy was performed 4¾ hours post-mortem by Dr. F. B. Berry of Dr. F. B. Mallory's laboratory.

Body length 169 cm. Age 58 years. The body is that of a well developed, well nourished, middle-aged, white male. There is moderate lividity but no rigor mortis or oedema. The face is somewhat long, oval and narrow, and both it and the neck are somewhat tanned with constant exposure to the weather. The left pupil is .6 cm. in diameter and round; the right is oval, and measures 1x.8 cm. There is a median suprapubic incision 7 cm. in length. The upper 4 cm. are recently healed and still contain four interrupted silk worm gut sutures. The lower 3 cm. are open and a large rubber drain is inserted. The wound edges all appear clean.

Peritoneal Cavity. The intestines are slightly distended. There is no evidence of any peritonitis anywhere in the peritoneal cavity. The appendix is 6 cm. in length, free and retrocaecal. The mesenteric lymphnodes are negative. On the left, the diaphragm is at the level of the fifth interspace; on the right at the fourth rib. The liver extends 6.5 cm. below the ensiform.

Pleural Cavities. There are a few strands of old adhesions about the right apex.

Pericardial Cavity. Contains about 20 c.c. of clear, straw-colored fluid.

Heart. It is of normal size and, on opening and sectioning, the muscle is of excellent color and tone. The valves are negative except that in the mitral and about the base of both it and aortic valve there are a few yellow, sclerotic patches. Similar patches may be seen in the coronaries occasionally.

Measurements. Tricuspid valve, 14 cm.; pulmonary valve, 8.5 cm.; mitral valve, 11. cm.; aortic valve, 8. cm.; left ventricle, 1.2 c.m; right ventricle, .5 cm.

Lungs. Both apices exhibit a small amount of contraction with white fibrous scars. There are petechiae over the dependent portions of both lower lobes and on section some granular and slightly projecting irregular foci are noted. Both lungs are decidedly moist. They are otherwise large and well distended with air. The bronchi are congested and contain a very small amount of mucus. The bronchial lymph nodes are negative.

Spleen. Is small, pale blue-gray, and flabby. On section the pulp is a dull brick red and does not scrape away.

Gastrointestinal Tract. The stomach is dilated to about three times its normal size, otherwise the intestinal tract is negative.

Pancreas. Negative.

Liver. Apparently normal in size. The capsule is smooth and the color a dull chocolate brown. The gall-bladder contains a pale mucoid bile and, together with the ducts, is negative.

Kidneys. Are of equal size and shape and appear to be of normal weight. On section the cortex is well demarcated from the pyramids and shows nothing abnormal. It is about .5 cm. in thickness and the glomeruli may be seen clearly as fine transparent points. The pelves show a few punctate hemorrhages. The ureters are negative. No calculi can be found in kidneys or ureters.

Adrenals. Negative.

Bladder. There is a wound in its anterior and superior portion through which the drain is inserted. It is much contracted and its mucosa is in folds and much congested, with a small amount of fibrin on its surface.

Genital Organs. The prostate is slightly enlarged and on section shows grossly a glandular hypertrophy and dilatation.

Aorta. There are a few yellow fatty portions and in the abdominal portion these have become thickened and more fibrous.

Organs of Neck. Not examined. Nothing abnormal on palpation.

Head. The head is covered with steel gray hair. The scalp, calvarium and dura are negative.

Brain. It is normal in development and size and, save for congestion and a slight pink tint of the gray matter of the basal nuclei, shows no gross lesions. The pink color is especially marked in the pons and medulla. The middle ears are clean.

ANATOMICAL DIAGNOSIS.

(?) Encephalitis.
Hypertrophied prostate.
Recent operation, cystotomy.
Healed tuberculosis, both apices.
Healed pleuritis, right apex.
Hypostatic pneumonia, both bases.
Dilatation of stomach.

MICROSCOPIC EXAMINATION.

Heart. Negative.

Lung. The pleura is thickened and fibrosed, in one section, and there are foci of lymphocytes in it. In the other there is a bronchitis and bronchopneumonia with an exudate of polymorphonuclear and endothelial leukocytes. Many of these latter contain fat.

Spleen. Slight thickening of the trabeculae and of the walls of the arteries.

Stomach. Congestion of the mucosa and infiltration with lymphocytes and polymorphonuclear leukocytes. Some of the glands contain leukocytes.

Pancreas. Negative.

Liver. Irregular areas of congestion.

Kidney. Negative. Small adenoma.

Adrenal. Postmortem changes.

Bladder. Chronic cystitis. Epithelium thickened and lymphocytes in submucosa.

Prostate. Hypertrophy due to glandular hyperplasia and slight dilatation and chronic inflammation.

Aorta. Fatty endothelials beneath the intima.

Brain. Sections of the cortex are negative except for congestion and oedema. Sections through the basal nuclei vary. The vessels show marked hyaline change. In some sections there is almost nothing, whereas in others there is a marked lymphocytic and endothelial reaction about the vessels, diffuse infiltration of the tissues with lymphocytes, and rarely small hemorrhages. The process is most marked in the pons. The cerebellum shows a small zone of lymphocytic infiltration. The medulla and cervical cord are negative except for a slight perivascular reaction in the latter.

Hypophysis. Congestion.

Choroid Plexus. Negative.

MICROSCOPIC DIAGNOSIS.

Encephalitis lethargica.
Bronchopneumonia.
Chronic gastritis.
Small so-called adenoma of kidney.
Chronic cystitis.
Hypertrophy of prostate due to glandular hyperplasia, dilatation, and chronic inflammation.
Hyalin in arteries of brain.

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WEEK'S DEATH RATE IN BOSTON.

During the week ending December 4, 1920, the number of deaths reported was 207 against 187 last year, with a rate of 14.43 against 12.24 last year. There were 30 deaths under one year of age against 34 last year,

The number of cases of principal reportable diseases were: Diphtheria, 51; scarlet fever, 19; measles, 22; whooping cough, 28; typhoid fever, 3; tuberculosis, 52.

Included in the above were the following cases of non-residents: Diphtheria, 10; scarlet fever 3; typhoid fever, 1; tuberculosis, 6.

Total deaths from these diseases were: Diphtheria, 7; scarlet fever, 2; tuberculosis, 12.

Included in the above were the following cases of non-residents: Diphtheria, 1.

Infantile paralysis cases,1; deaths, 1.

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REPORT OF THE MATERNITY BENEFITS COMMISSION.

To Dr. Alfred Worcester and his associates on the Commission on Maternity Aid and to all who gave their help, the medical profession and the citizens of the Commonwealth owe a great debt of gratitude. Few realize the amount of labor and thought devoted so unselfishly to the task assigned them. The report they have presented to the Legislature is printed almost in full in the Journal today and we ask all our readers to study it carefully. Unfortunately at the time of going to press the appendices to the report were not available.

The report and the recommendations presented should, we believe, command the support of a great majority of the medical profession. It is to be hoped that it marks the beginning of a better era. In brief, the evidence shows that the maternal death rate due to pregnancy and childbirth in Massachusetts is unreasonably high, that the morbidity rate is correspondingly high, that the proportion of still births is excessive, and that the mortality returns are not satisfactorily made.

It is considered that in a large percentage of cases both maternal and infant deaths are preventable. It is shown that pre-natal and post natal nursing have been both in Massachusetts and elsewhere of great value. It is recommended that these two measures be provided throughout the State under the supervision of the Department of Public Health. It is further recommended that adequate obstetric nursing and household attendants be provided. In cases of need other care may be provided so that no woman shall suffer at the time of her confinement for lack of proper attention.

All of the recommendations made seem to be steps in the right direction. There are, however, many other steps to be taken in the journey of progress. The report states that obstetric practice must be improved, but suggests that this is a matter for the medical schools and the board of registration in medicine to deal with. Is it not rather a matter in which the public must be educated? Until obstetrics is recognized as a specialty in the same sense in which surgery is recognized as a specialty, can we look for great improvement in the mortality and morbidity incident to childbirth. Prenatal nursing does much. Post-natal care does much. Nursing during labor and confinement does much; but will any of these measures change materially the deaths from septicemia which the report of the Secretary of the Commonwealth in his report for 1917 spoke of as "little short of criminal"?

Will any of these measures cut down the incidence of sepsis which Dr. J. Whitridge Williams of Baltimore says is as great today as thirty years ago? Will they decrease the deaths from the accidents of labor or will they cut down the morbidity due to injuries of delivery? Will they decrease the infant death rate or will they decrease the morbidity of infants due, for example, to cerebral hemorrhage occurring at birth? Such questions suggest the next steps to be taken.

It is to be regretted that returns of deaths due to pregnancy are inadequately reported. It is to be hoped that such returns and returns in regard to morbidity may in the future be obtained as has been suggested by a correspondent of the Journal.

The transfer of the control of lying-in hospitals to the State Department of Health would be of great benefit, and proper regulations regarding their conduct would assist in bettering obstetrics throughout the State.

Adequate hospital facilities today make modern surgery possible, and make possible the advances in scientific medicine. Trained and recognized surgeons and internists do the work in these hospitals. Can obstetric practice advance materially until adequate hospital facilities are provided in which trained and recognized obstetricians can do their work? In some way, moreover, trained obstetricians must direct the nurses which it is proposed that the State shall provide.

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MEDICAL NOTES.

Appointment of Dr. Ardrey W. Downs.—Dr. Ardrey W. Downs, formerly assistant professor of physiology at McGill University, has been appointed to the chair of physiology in the University of Alberta.

American Association for the Advancement of Science.—The meeting in Chicago of the American Association for the Advancement of Science, at which Dr. Simon Flexner, as retiring president of the Association, will deliver an address, is to be held on the evening of December 27, instead of on the following evening as it was originally planned.

Appointment of Dr. Kenneth D. Blackfan.—Announcement has been made of the appointment of Dr. Kenneth D. Blackfan, associate professor of pediatrics at the Johns Hopkins Medical School, to the professorship of pediatrics at the Medical College of the University of Cincinnati.

Gift of Medical Library to the University of Chicago.—A medical library, valued at twenty-five thousand dollars has been given to the University of Chicago by Dr. Frank Billings, professor of medicine in the University. This library will form the nucleus of the clinical library of the Medical School and eventually will be housed in the Albert Merritt Billings Hospital.

Appointment of Dr. James W. Papez.—Dr. James W. Papez, formerly professor of anatomy and neurology at Emory University School of Medicine, Atlanta, Georgia, has been appointed assistant professor of neurology at Cornell University Medical College, Ithaca, New York.

Bequests of Dr. Lloyd Roberts.—Included among the bequests of the late Dr. Lloyd Roberts of Manchester, England, are the following gifts to medical organizations: to the Royal Society of Medicine, £5,000; to St. Mary's Hospital, Manchester, £5,000; to Manchester Royal Infirmary and to the Royal College of Physicians, London, £3,000 each; and £2,000 to the Medical Society of London.

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The Massachusetts Medical Society.

THE REPORT OF THE SPECIAL COMMISSION TO INVESTIGATE MATERNITY BENEFITS.

The Commission, consisting of Alfred Worcester, M.D., Chairman; Eugene R. Kelley, M.D., Commissioner of Public Health; Robert W. Kelso, Commissioner of Public Welfare; Edward E. Whiting of Newton, and Mrs. Helen A. MacDonald of Roxbury, have presented their report, which is here published in slightly abbreviated form.

I. The Investigation.

The Commission found it necessary, owing to very incomplete data, to investigate the need for improvement in the care of child-bearing women and their infants.

An intensive investigation of all maternal deaths in Massachusetts for the first half of 1920 and a study of the facts in relation to infant deaths in a group of cities and towns fairly representative of the various communities in the Commonwealth, was made. Evidence based upon similar studies elsewhere was considered. The Commission believes this is the first time basic facts of this nature have been collected and studied for a state.

Six hundred to seven hundred women die in Massachusetts each year from causes due to pregnancy or childbirth. For the past five years the maternal death rate has been as follows: 1915, 48 per 10,000 births; 1916, 56; 1917, 64; 1918, 84 (high on account of the influenza epidemic); 1919, 60. A large percentage of these deaths resulted from septicaemia, toxaemia, or the accidents of pregnancy and labor.

During the first half of 1920, 354 maternal deaths were reported and the Commission was able to secure sufficient information to make an estimate of preventability in about 300 of these cases. After careful study, 39% were deemed to have been preventable.

Included among the preventable cases were those due to the toxaemias of pregnancy, septicaemia, accidents of pregnancy and labor in patients with little or no prenatal supervision or obviously inadequate care at the time of confinement, and those due to communicable diseases generally recognized as preventable. In drawing conclusions like these, certain reservations must be made. For example, "prenatal care" can hardly be said to be adequate if it includes only a call to engage a physician, who perhaps may take occasion to lay down a few general rules for the patient to follow. The death certificates may not tell the whole story. Many cases were thrown out of consideration during the compilation of these statisties because the information available was so meagre as to preclude scientific classification. Unquestionably many of these unclassified deaths belong within the group of septicaemias or of other preventable groups.

In a very large majority of preventable cases the care is clearly inadequate and the number of cases which had adequate prenatal care is almost negligible. Nursing service during confinement was lacking in more than half the cases. A large number of the women are stated to have received hospital care, but almost all of these cases reached the hospital only after serious symptoms had developed. The hospital care of these cases was not prearranged, nor was there a chance for anything but emergency treatment.

No definite relation between maternal deaths and financial, economic or social conditions was disclosed. Child-bearing women of all classes, races and condtions die in unreasonably large numbers. The rapid disintegration of families in which the mother has died was very noticeable. For example, in August and September no trace could be found of many such families where the death had occurred during the first half of this year.

Infant deaths also are in large numbers preventable. During 1919, in Massachusetts, the death rate for infants under one year was 88.2 per thousand live births. More than half (45.4 per 1,000) died before they were a month old. For purposes of study, the infant deaths for the first half of 1920 were divided into two classes: first, those dying at the age of one month or less, and second, those dying between the ages of one month and one year.

In the first class, 39% of the deaths were deemed to have been preventable. As in the case of maternal deaths, the need seemed to be for improved prenatal or obstetric service. Economic and social factors did not bear a definite relation to these deaths; but nursing service was conspicuously lacking. In a large number of cases physicians were called too late to handle the case properly.

The Commission's estimate of preventability of both maternal and infant deaths is conservative in view of actual results of improved prenatal and obstetric and postnatal care obtained elsewhere. The facts set forth as to the causes of death coincide with those disclosed elsewhere. More than 3,000 stillbirths are recorded in Massachusetts each year, the rate being 34.7 per 1,000 live births for 1919. The number reported is far below the actual number. How far the rate for stillbirths can be reduced by proper maternity care is shown by the following: In a series of 4,500 cases cared for by the Maternity Centre Association of New York the rate is 24 per 1000 live births, as against 60 for New York City as a whole. Prenatal and improved obstetric care will reduce the number of stillbirths very materially.

Of the deaths of infants between the ages of one month and one year, 38% were found to have been preventable. The type of care needed to reduce this second class of cases is quite different from that required by the other groups. The figures disclosed a very much higher percentage of poor families in this latter group. Feeding, housing and economic factors here play an important part, and yet many of these little lives would have been saved had their homes been visited by nurses, giving instruction regarding feeding and otherwise assisting in the care of the infants. Gastro-intestinal and respiratory diseases were conspicuous among the causes of these preventable infant deaths. The total number of infant deaths occurring during the second to twelfth months of life, however, is about equal only to the number occurring during the first month. Nevertheless, practically all of the work intended to reduce infant mortality has been directed towards the care of infants more than one month old.

Ignorance of hygiene on the part of the members of all classes of society and all races is disclosed in all the groups of maternal and infant cases studied. Failure or refusal to take advantage of existing facilities was a common occurrence. Among 1000 infant deaths in 1919, the cases where a physician was not called at all, or made but one visit, number nearly one-half.

II. The Medical Questionnaire.

To obtain the opinion of the medical profession, a questionnaire was sent to the six thousand registered physicians of Massachusetts. Answers were received from 1,459. Of these 78 only were from physicians engaged in obstetric practice during the year 1919.

The more important questions were answered as follows:

To the question, "Would any of your obstetric patients during the year 1919 have benefited by more prenatal nursing service?", 251 answered "Yes," 543 answered "No," 645 gave no answer.

To the question, "Would any of your obstetric patients have benefited had you been able to care for them in a lying-in hospital?", 319 answered "Yes," 401 answered "No," 739 gave no answer.

To the question, "Do you favor any state assistance in providing more:

a. "Lying-in hospitals?", 630 answered "Yes," 384 answered "No," 445 gave no answer.

b. "Nursing service, before, during and after confinement?", 692 answered "Yes," 331 answered "No," 436 gave no answer.

c. "Expert obstetric consultants?", 544 answered "Yes," 450 answered "No," 465 gave no answer.

To the question, "Do you believe that, by any action on the part of the Department of Public Health in the distribution of maternity benefits, it would be possible to reduce

a. "Maternal mortality?', 661 answered "Yes," 371 answered "No," 427 gave no answer.

b. "Maternal morbidity ", 649 answered "Yes," 343 answered "No," 467 gave no answer.

c. "Infant mortality?", 698 answered "Yes," 320 answered "No," 441 gave no answer.

d. "Infant morbidity?", 693 answered "Yes," 305 answered "No," 461 gave no answer.

To the question, "Do you favor the granting of state aid to childbearing women

a. "By direct gratuity to mother?", 285 answered "Yes," 509 answered "No," 665 gave no answer.

b. "By payment of physician's fee?", 402 answered "Yes,' 414 answered "No," 665 gave no answer.

c. "By limitation of gratuities in accordance with the financial status of the family?", 530 answered "Yes," 344 answered "No," 585 gave no answer.

d. "By a general health measure, free to all inhabitants of the state?", 289 answered "Yes," 522 answered "No," 648 gave no answer.

The answers to the request for reasons for favoring or for opposing state aid to childbearing women in any of the proposed ways covered a wide range. No useful tabulation of them is possible. But the principal objections are based upon the fears:

1. that such legislation tends toward socialism and government paternalism;
2. that such aid would pauperize families accepting it;
3. that the state control of the practice of obstetrics would be the entering wedge of health insurance and subject the profession to politics and graft;
4. that the already over-burdened taxpayers would resent the large expenditure that would be involved;
5. that illegitimacy and also the procreation of the most unfit would result from such aid being given by the state.

Those in favor of state aid to childbearing women give as their reasons:

1. that every child, as a future citizen, has the right to proper care at birth, and that by such care

the state would be relieved of a considerable part of the expense of caring for cases of future helplessness that might have been prevented;

2. that conservation of health and the prevention of disease is a proper function of the state;

3. that larger provision of lying-in hospitals and of maternity nurses would save many lives;

4. that the standard of obstetric practice would be raised and that women would become better educated in the hygiene of childbearing if the State Department of Public Health should be authorized to undertake these problems;

5. that the number of abortions would be lessened and that midwives would be put out of business by a sufficient supply of prenatal clinics.

If the arguments of the physicians favoring some form of state aid being given to childbearing women are balanced against the arguments of those opposing, and if the "Yes" votes, as given above, are balanced against the "No" votes upon the proposed ways of giving such aid, it may fairly be stated that, while a majority are against giving maternity benefits directly, either to the mothers or to their physicians, a majority of practically two to one believe that, by state aid, in providing larger lying-in hospital accommodations and more maternity nursing service, it would be possible to reduce both the maternal and infant death rates and also their morbidity. A smaller majority favored the provision by the state of a larger, or of a better distributed, supply of obstetric consultants.

Many of the objectors state that no needs exist in their own special localities, giving as their reasons that they now have available sufficient lying-in hospital accommodations and also a sufficient supply of visiting nurses. Such answers, of course, only emphasize the reasons for action by the state to ensure similar advantages for all communities.

Regarding the other reasons given by the objectors, while we do not here undertake to present counter arguments, we may be allowed to state that in reaching our conclusions we have not failed to give most careful consideration to every objection that has been brought to our notice.

III. The Social Service Questionnaire.

To obtain the views of organizations engaged in visiting nursing and other forms of charitable work, a special appeal was made for their coöperation. Answers were received from The Worcester Society for District Nursing, The Associated Charities of Worcester, The Instructive District Nursing Association of Boston, The Brockton Visiting Nurse Association, The Lowell Guild of District Nursing and Baby Hygiene, The Lowell Social Service League, The Boston Provident Association, The Boston Children's Friend Society, The Newton District Nursing Association, The Visiting Nurse Association of Springfield, The Associated Charities of Boston, and The Children's Home Association of Hampshire County.

These answers were based upon 7,402 births during the year ending August 31, 1920, cared for by these societies.

In answer to the question, "Was there in any of these instances a failure of proper maternity care during confinement?"—five, representing 6,477 cases, said, "Yes"; six, representing 925 cases, said "No."

In answer to the question, "Was there any instance in which the mother was obliged through poverty to get up and be about sooner than the physician would ordinarily advise?"—four, representing 5,763 cases, said "Yes"; six, representing 1,639 cases, said "No."

In answer to the question, "Were there cases where definite impairment of health occurred, either of mother or of child, because of lack of proper care before, during, or immediately after confinement?"—three, representing 5.289 cases, said "Yes"; eight, representing 1.426 cases, said "No."

In answer to the question, "Was there any instance where failure of prenatal advice and instruction resulted in danger to the health of mother or child?', —two representing 5,041 cases, said "Yes"; nine representing 1,674 cases, said "No."

In answer to the question, "Would a straight maternity benefit paid by the Commonwealth, be justified, in your opinion, based upon your experience?"—three, representing 927 cases, said "Yes;" seven representing 772 cases, said "No."

It will, of course, be noticed that these answers are based upon the cases that were for more or less time under the care of these societies, and that, while they belonged largely to the destitute class, they nevertheless were far better cared for than were many in moderate circumstances. The comments furnished by these social workers are illuminating. Their experience certainly gives great weight to their opinions. All emphasize the importange of visiting maternity nursing. The Instructive District Nursing Association of Boston, for instance, reports a maternal mortalty rate of 28 per 10,000 births, where their nurses were employed, while for the whole city, the corresponding maternal death rate was 66.5, in 1918, and 66, in 1919. The infant death rate in Boston during the first week of life is reduced more than 50% where prenatal care is given.

Brockton reports instances where their visiting maternity nurses have been able to persuade pregnant women to give up shop work in proper season, and others their intended criminal interruption of pregnancy.

Lowell reports that existing facilities for hospital and nursing care are not sufficiently availed of by patients and their physicians.

Several societies report upon the special need for women illegitimately pregnant of prenatal and long-continued postnatal nursing care. In such cases a cash benefit, however large, would, perhaps, afford a temporary solution of the problem but not the necessary upbuilding.

The Associated Charities of Boston, which deals, for the most part, with families in straitened financal condition, reports only a very few cases where the mother failed to receive due medical and nursing care, or where the mother was forced by poverty to get up and about too soon after childbirth. Instead, the main trouble is from lack of household workers to care for the home and the other children during the mother's confinement. This lack, in their opinion, would not be overcome by cash maternity benefits, but only by supplying a trained corps of workers.

IV. Conclusions.

The results of its investigations of actual conditions of childbearing and of infancy throughout the state, in comparison with conditions elsewhere, and in some of our own favored localities, convinced the commission that it is high time for action.

The advice and suggestions given by experts and by those who answered the medical and social service questionnaires, served only to deepen this conviction that the state, acting for all, should undertake the safeguarding of mothers and their infants. The problem becomes more simple by stating it.

All proposals for maternity benefits purpose to make childbearing easier and safer for both mother and child. The different plans advocated may be divided into: first, the economic, and second, the hygienic. Hygienic measures may include economic relief, but no financial subsidizing of childbearing can insure hygienic reforms. We are thus led to search for the most feasble methods of safeguarding the life and health of childbearing women and their infants.

While undoubtedly there is large room for improvement in obstetric practice, we do not consider this subject to be within our range. It seems to belong, rather, to the medical schools and to the Board of Registration in Medicine, but within the past half century a large share of medical responsibility in obstetric cases has been transferred by physicians to nurses who serve as their assistants. Maternity nursing has thus become of great importance. And it is in the further development of this that we find largest chances of improving the general hygienic conditions of childbearing. *Maternity Nursing* includes: (1) prenatal nursing, or the care of pregnant women; (2) obstetric nursing, or the nursing of women during their labor and confinement; and (3) postnatal nursing or the visiting care of mothers and their infants.

1. *Prenatal Nursing.*

The great advantages of the care of pregnant women by specially trained nurses is clear. The good results first shown by the Committee on Infant Social Service of the Women's Municipal League of Boston, begun in 1909 and, since 1915, carried on by the Instructive District Nursing Association, have since been confirmed in may other cities in this country. Besides the remarkable lowering of both maternal and infant mortality that results from prenatal nursing, there is an equally gratifying saving of the health of both the mothers and their infants, although this cannot be shown in statistics.

Wherever prenatal nursing is carried on, it is endorsed by the physicians as well as by the families served by it. But, where not understood, it is looked at somewhat askance. And, just as the anti-tuberculosis visiting nurses at the start often have to make their way against prejudice, so the prenatal nurses in beginning their work often have to surmount a like indifference, if not an active opposition.

Prenatal nursing has been carried on by private charities, and, latterly, by some Boards of Health. Despite advantages in the management of such service by volunteer organizations or by local Boards of Health, and the possible sacrifice of these advantages if the oversight were surrendered to the State Department of Public Health, such loss would be outweighed by the greater stability and uniformity and also by the wider scope of the service which would result.

The prevention of disease is the most important function of the medical profession. Fifty-one years ago the leading physicians of Massachusetts persuaded the Legislature of create the State Board of Health—the first in the country—to carry into effect what was then known, or might afterwards be discovered, of disease prevention. Prenatal nursing is a branch of preventive medical practice. The nurses so occupied are the physicians' assistants and lieutenants, carrying out the measures ordered.

If it is asked, "Why should not the families rather than the Commonwealth pay for whatever benefits they may receive from the visits of a prenatal nurse, and why should the state furnish such service in advance of any public demand for it?"—the answer is that the worth of such service is not yet generally recognized. Prenatal nursing, like all other health conservation measures, is essentially an educational service, and the wise policy of the state is to furnish free education.

2. *Obstetric Nursing.*

Every woman needs and ought to have the help of other women during her labor and confinement. In former days this help was given by neighbors. Today obstetric nursing is a specialty. Only the rich today can afford proper service. The very limited supply of obstetric nurses is made still less by the custom of keeping them for months afterwards as childmaids. This misuse of their professional skill and knowledge serves further to decrease the supply by deterring ambitious nurses from taking obstetric cases.

Essential as trained obstetric nursing is, such service is now to be had in only a small percentage of cases. In no other branch is the shortage so calamitous.

Immediate relief in large measure can be obtained by the service of visiting obstetric nurses during the labor and by daily visits during the confinement. This service, now given by some associations, ought to be available in every community. In our opinion, this is a proper field for action by the state through its Department of Public Health.

Most mothers will always prefer to have their babies born in their own homes and most families will be the better for sharing the incident troubles and joys. But lying-in hospitals are growing more and more popular, owing, in part, to the lack of nursing service.

Lying-in hospitals ought to be utilized mainly for abnormal cases and for the homeless. Unfortunately, the high rates charged by most prevent their use by many who need such accommodation. The lack of any medical supervision of many lying-in hospitals should be remedied by transferring from the Department of Public Welfare to the Department of Public Health the responsibility of licensing and supervising these hospitals. Provision should be made for patients needing hospital care who are unable to pay for it.

Other causes of the growing popularity of the hospital are the inadequacy of most homes and the need during the confinement of mothers' helpers. The loss of the old-time monthly nurses, who used to do all the household work as well as look out for both the mother and the baby, can be replaced by organitions which provide household workers and visiting nurses. Such provision can be furnished at prices well within the reach of families in moderate circumstances Such organizations are in operation and are, in large part, self-supporting. A comparatively small demand upon charity is made in order to ensure for the very poor the same adequate service.

Few families understand the benefit or the need of prenatal nursing, but all understand the need of help at the time of labor and confinement. In these cases, the family has time for saving the needed money and, where the service of nurses and mothers' helpers is available, it should be paid for by the families served.

The function of the community, or of the state, is to provide for all, rich and poor, a sufficient supply of such service. This might be done by the local Boards of Health and the various social service organizations, but, in our opinion, success would be more assured by charging the Department of Public Health with the general supervision of the scheme.

An adequate supply of skilled nurses and mothers' helpers, whose services could be had at moderate prices, we believe of greater benefit than the giving of financial aid to expectant mothers. To those unable to pay the regular rates, abatements could be made.

3. *Postnatal Nursing.*

The helpful supervision by a visiting nurse during the first year of infancy is as important as the prenatal and obstetric care.

Most of the sicknesses and deaths of infants are preventable and largely due to ignorance. Child Welfare Clinics, where mothers can learn how to feed and care for their infants, have caused a most marked saving of life and lessening of infant morbidity. In connection with the Welfare Clinics, the services of visiting nurses insure the carrying out of medical instructions.

Postnatal service can best be given by the prenatal nurses who have already won the confidence of the mothers. It is essentially an educational service and should be given without charge. As a branch of medical preventive practice, it ought to be available throughout the state and supervised by the Department of Public Health.

V. SUMMARY.

1. As a result of our investigations, we find that the mortality in Massachusetts, both of mothers and of infants, is much larger than it should be, or would be if proper care were taken of childbearing women, and. further, that the same is true of the amount of sickness and disability incident to maternity and infancy. We also find that these disasters are due primarily not to the poverty of the afflicted families nor to their social status, but, rather, to their ignorance of hygiene.

2. We are, therefore, forced to the conclusion that no sufficient relief would result from the distribution of maternity benefits in the form of cash, in whatever amounts or ways, as proposed in the various bills submitted to us for consideration.

3. We believe, instead, that childbearing can be better safeguarded and the burdens of it lightened by providing an adequate supply of maternity nursing service. This we believe to be a proper function of the state, that can be well performed through the Department of Public Health.

4. Prenatal, obstetric, and postnatal nursing visits are of educational and life saving value, as has been abundantly proved and we therefore believe that such service should be free to all.

5. As for the resident nursing needed during labor and confinement, and the equal need of houseworkers at such times, we believe that all who can afford to pay for it should do so. But we recognize the fact that, because of the present shortage, such service is often not now obtainable by families able and willing to pay for it. This shortage is due, in large part, to the lack of organizations that would make the existing supply of such service more available. And we believe that this default can be remedied by bringing its importance to public attention in all, as already it has been in some communities. We believe that state maternity nurses will be able to do this and thus to induce community movements for supplying this need.

6. Local agencies should be encouraged, wherever feasible, to furnish maternity nursing service. By this means local interest is fostered and a wider knowledge of local conditions is ensured, which is the first and most important step toward their betterment. To this end the State Department of Public Health should utilize, wherever possible, such agencies in its administration of maternity aid. One advantage of such procedure will be that families able and willing to pay in whole or in part for nursing services received will naturally continue to do so.

7. To pregnant women who have not sufficient means to pay for their subsistence and the medical care needed at the time of confinement, and to those women who, because of the unfitness of their homes or because of physical complications, need hospital care and yet are unable to pay for it, we believe that sufficient aid should be given. At the very least, their own and their infants' lives should be safeguarded.

8. This aid, we believe, should be given either, as it is now, by charitable organizations, or by the public authorities. We do not believe there should be organized any other agency for this purpose. But, in order to make sure that there shall be no failure in so aiding all whose need is real, we recommend that the Department of Public Health and the Department of Public Welfare be specially authorized to cooperate in furnishing such aid, without allowing the stigma of pauperization to fall upon its recipients.

9. We believe that all lying-in hospitals should be under the supervision of the Department of Public Health, and we therefore recommend that the responsibility of licensing them be transferred to that Department.

10. For these reasons, instead of endorsing any of the bills submitted for our consideration, we recommend the following legislation:

VI. AN ACT FOR THE BETTER PROTECTION OF THE LIFE AND HEALTH OF MOTHERS AND INFANTS.

SEC. 1. The Department of Public Health is hereby authorized to provide advice, instruction and visiting nursing care to women during pregnancy and conconfinement and to mothers and their infants after childbirth, regardless of their financial condition.

SEC. 2. Whenever it shall come to the attention of the Department of Public Health that any such woman is in need of aid other than that provided for in Section One, may certify the fact, together with recommendations as to the care necessary, to the Commissioner of Public Welfare or to the authorities of the city or town in which the mother or infant so certified is found in distress, and thereupon it shall be the duty of the Department of Public Welfare, or the local authorities, as the case may be, to provide such care; and no woman shall be deemed to be a pauper by reason of having received such aid.

SEC. 3. No mother or infant shall be eligible to the provisions of Section Two unless the mother shall at the time of certification have been a resident of this Commonwealth for a period of six months at least.

SEC. 4. The Department of Public Health shall make and may alter, revise or amend all reasonable rules and regulations necessary to the execution of this Act, and no mother shall be eligible to the provisions of this Act unless she shall comply with the same.

SEC. 5. The Department of Public Health in the execution of this Act may employ nurses on full time or on part time in its discretion and nurses employed on part time shall be exempted from the operation of Civil Service Rules and Regulations.

SEC. 6. The said department may take such steps as may be necessary to disseminate information regarding the objects of this Act.

SEC. 7 For the purpose of carrying out the provisions of this Act there may be expended annually by the Department of Public Health such sums as may be appropriated by the General Court.

It should be added that a separate bill is to be presented to the Legislature, providing for the supervision of Lying-in Hospitals by the Department of Public Health.

It is estimated that $300,000 will be needed to carry out the provisions of the act printed above.

Miscellany.

SOCIETY NOTICE.

THE NEW ENGLAND WOMEN'S MEDICAL SOCIETY will meet at the office of Dr. Denig, Hotel Bristol, Copley Square, Thursday, December 16, at 8 P.M. Subject: Aspects of Tuberculosis. Dr. Carvill, Infections of the Eye; Dr. Kleinert, Infections of the Throat; Dr. Cummins, Infections of the Skin; Dr. Adams, Surgical Aspects; Dr. Bigelow, Medical Aspects.

ALICE H. BIGELOW, M.D., *Secretary*.

RECENT DEATH.

DR. JOHN W. COUGHLIN died at his home in Fall River, on December 4. Dr. Coughlin was born in Fall River on June 9, 1861. He was a graduate of the College of Physicians and Surgeons in Baltimore, where he received his medical degree in 1885. Dr. Coughlin served four terms as mayor of Fall River. During the war he served in France on the Frothingham Mission. He is survived by one sister, Miss Helen Coughlin of Fall River.

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CLINIC ON THE DIAGNOSIS AND TREATMENT OF NEUROSYPHILIS.*

By H. C. Solomon, M.D., Boston,

Member of the Massachusetts Psychiatric Institute; Instructor in Pyschiatry and Neuropathology, Harvard Medical School.

It will be my endeavor to present some of the problems of syphilis as seen by the neuropsychiatrist. These will represent chiefly, of course, the syphilitic involvements of the central nervous system.

There are innumerable classifications of syphilis of the central nervous system, or, as we prefer to say, neurosyphilis. These classifications differ according to whether they are based upon the pathology, the clinical symptoms, or the stage of the disease in which the involvement of the nervous system occurs. A long period of therapeutic endeavor has shown that there are two distinct types of neurosyphilis: First, that which is very satisfactory to treat; the second, that which is relatively recalcitrant to treatment. The first group of cases, those which react very satisfactorily to antisyphilitic treatment, include those cases spoken of as cerebral syphilis, cerebrospinal syphilis, syphilitic meningitis, and so on. The second group is represented chiefly by the diagnoses of general paresis and tabes dorsalis.

Modern experience is in agreement with the experience of former days, in that we can recognize a group of cases which offer the most satisfactory therapeutic results to be found anywhere in the practice of medicine, and those cases which are so difficult to improve or help that they are the bugbear of the physician.

In a general sort of way, the stage of the disease in which the involvement of the central nervous system occurs has a certain prognostic significance. Those cases occurring during the early secondary stage of the disease are exceedingly satisfactory to treat. The difficult cases,—paresis and tabes,—are prone to occur ten to thirty years after the original infection. However, there are many cases of simple meningeal involvement which occur at this late period also, and the symptoms, although most striking and most fearful to see, may be made to disappear easily and satisfactorily.

To the neuropsychiatrist, syphilis appears as a very different disease from that which is ordinarily seen in a dermato-syphilogical clinic. Practically every case seen by the neuropsychiatrist presents a very serious problem for the life, mentality, or usefulness of the patient.

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* Presented at the Quarterly Meeting of the Chiefs of the State Venereal Clinics, Jan. 14, 1920.

There is no more dangerous condition than general paresis, not excepting carcinoma. There is nothing more terrible, more debilitating, nothing that causes more suffering and disability, than tabes dorsalis. Cerebral thrombosis, hemiplegia, brain gumma, and the fulminating types of syphilitic meningitis, jeopardize the life and usefulness of the patient in every instance in which one of these conditions occurs.

Let us contrast this with what is seen in the early stages of syphilis. Looking at the early period of syphilis,—the primary or secondary stages,—from the viewpoint of the neuropsychiatrist, the symptoms of these stages look very innocuous and unimportant. Their importance would seem to lie in what is going to happen in the future, not in what is likely to occur in the present. It is recognized that there is an occasional severe primary lesion leading to phagedenic ulcerations, that the prostration may be quite severe, and that the secondary stage may produce rather serious rupial lesions. Even these conditions are very infrequent, occur in but a very small percentage of the cases, and even if they do occur, modern treatment nearly always has such very quick and wonderful results that the whole affair does not seem to be of the same significance as paresis or tabes or hemiplegia. And so the vast majority of the tertiary symptoms, referable to the skin or to the bones, even when unpleasant or painful, do not affect life or the patient's utility in the world. They, again, react very satisfactorily to treatment. On the other hand, there may be visceral involvement which is just as important and dangerous as the nervous system involvement. We refer to the cardiovascular, cardiorenal, hepatic, pancreatic, pulmonary, and alimentary tract involvement. Thus when the neuropsychiatrist is confronted with a case of syphilis that is syphilis of the central nervous system he is face to face with a serious problem. Every case that he sees appears to him to be an accusing finger pointing to some member or members of the medical profession, who have somewhere, sometime, or somehow failed to do their duty by that case. It does not follow that every accusation, or every indictment, can lead to a moral conviction. Many of the neurosyphilitic cases give no history of syphilitic infection, either by name or by symptoms. Yet the majority of these patients have been in the hands of a physician who might have made a diagnosis of syphilis, especially with the aid of a Wassermann test. Again, many a patient whom we see late has failed or refused to follow the correct advice given by the physician who saw him in the early stages of the disease. Still it is not altogether unfair to say that some blame attaches itself to a medical situation that does not provide for a satisfactory follow-up on these cases. There is yet another large percentage of the patients who have been told by their attending physician that they were cured or needed no further treatment, and who later cast much useless blame upon the man who did not direct them rightly. Ten to fifteen or twenty years ago, it was not possible to tell a patient whether or not it was safe for him to go on without further treatment. It is perhaps more possible at the present day to advise a patient correctly as to his future course, and it is certainly more easy to learn whether or not the central nervous system itself is involved, and this better strategic position of the physician as an adviser is due to the lumbar puncture and the Wassermann test. To the neuropsychiatrist, the lumbar puncture is what the urine examination and blood examination, the x-ray picture, and the blood pressure are to the internist. And the lumbar puncture is all this to us, because syphilis is such a large factor in the practice of neuropsychiatry. About 10% of all the cases of mental disease seen by the neuropsychiatrist are directly due to syphilis; 30 to 50% of all cases seen in a neurological clinic are due directly to syphilis, and about 10% of all cases of syphilis develop a frank, serious involvement of the central nervous system.

It is necessary to briefly review the place taken by the spirochaete in the involvement of the nervous system. Beginning with the primary stage of the disease, it is recognized that there is a generalized involvement of the entire system of the individual. This includes, in all probability, the central nervous system itself. Numerous studies of the cerebrospinal fluid in cases of primary syphilis have shown evidence of spirochaetal invasion. Thus, Wile and Stokes (*Journal American Medical Association,* 1915, LXIV, p. 979) studied six cases of primary syphilis. They found that in three cases there were slight changes in the spinal fluid, indicating an involvement, while the fourth case showed marked change. Dennie and Smith (*American Journal of Syphilis,* 1918, II, No. 1, p. 101) found slight abnormalities in the spinal fluid in 35%, and more marked abnormalities in 20%.

In the secondary period of the disease there is even more evidence of the presence of the spirochaetes in the nervous system. The characteristic and well-recognized headaches of this period are, in all probability, due to meningeal involvement. Gennerich ("Die Liquorveränderung in den Eingelnen Studien über Syphilis," Berlin 1913) states that 90% of the cases whose spinal fluid was examined in the secondary period showed definite abnormalities of the fluid findings. Ravaut (*Ann. de Dermat. et de Syph.*, 1903, s. IV, page 1) gives the percentage of spinal fluid abnormalities as 67. Dennie and Smith (*loc. cit.*) report 35%.

Even more interesting is the result of animal inoculation. Marinesco and Minea (*Acad. de Sc. Sem. Mep.*, 1914, page 357) showed by animal inoculation that spirochaetes were present in the spinal fluid obtained from cases in the primary stage, although there was no clinical evidence of a nervous system involvement. Hoffman (*Derm. Ztsch.*, 1906, VIII, page 561) obtained similar results with spinal fluid obtained from cases in the secondary period of the disease.

In the vast majority of cases, the involvement during the primary and secondary stages is of relatively small importance, at least for the time being. With or without treatment, it is the rule for the symptoms to disappear, much as the secondary rash disappears. This disappearance of symptoms is more certain and more rapid with treatment than without treatment. In a rather small percentage of the cases, however, serious damage occurs in the secondary period of the disease in the form of meningitis, meningoencephalitis, and thrombosis or break of the cerebrospinal vessels. The overwhelming majority of cases of serious neurosyphilitic involvement occurs much later in the course of syphilis,—10, 20, 30, or even 40 years after the primary lesion. There is a large gap in our knowledge concerning the reason why certain cases of syphilis develop central nervous system lesions, and why others go through a long period of life without any disturbance. This is quite similar to what happens to the body at large. There are those cases of syphilis which, even without treatment, apparently run a benign course, and do not in any way disturb the patient's health or life. Numerous theories have been evolved endeavoring to explain why a certain group of syphilitic cases develop central nervous system lesions. One theory has it that there is a special strain of the spirochaetes having a predilection for the central nervous system. This hypothesis is supported by the following facts: A great number of cases are now on record where several people infected from the same source all developed syphilis of the brain or cord. It is not unusual to find tabes or paresis in both the wife and husband, and to find children of this couple having juvenile cerebrospinal syphilis of one form or another. It has further been shown by Reasoner and others that spirochaetes obtained from the cerebrospinal fluid of paretics have a tendency to produce central nervous system lesions in rabbits, whereas spirochaetes obtained from chancres or skin lesions do not tend to invade the nervous system in the same species of laboratory animal. Another theory has it that the tendency to nervous system invasion depends upon the constitution of the individual affected. Evidence has been brought to show that persons of so-called neuropathic constitution, when infected with syphilis, are prone to develop disease of the nervous system. It would seem, according to this reasoning, as if the barriers or defences which normally isolate the nervous system have been defective, and are easily broken down. Edinger, in his "Ersatz Theorie," has attempted to show that excessive use of a portion of the nervous system is likely to determine the invasion of that part. Thus, a mail-carrier would be prone to develop tabes, whereas a philosopher, Nietzsche, for example, would be more likely to develop paresis. We have seen, however, that the vast majority of persons infected with syphilis have their central nervous systems invaded by the organisms. Swift has used this evidence to devise the idea that in the cases that develop severe central nervous system involvement there occurs a hyperallergic reaction; in other words, that in the early invasion there has been produced a sensitization of the tissue and that later by some accidental flare-up, a few spirochaetes again make their way to the central nervous system, and in this previously sensitized tissue cause a tremendous reaction. Any or all of these theories may play a rôle in the production of the serious manifestations. It seems to me, however, that in a large percentage of cases, the spirochaetes have been active in the nervous system off and on for a large proportion of the time following the primary invasion and it is only because the progress has been slow or the defence of the host fairly good that no symptoms have resulted. This hypothesis has the advantage of keeping our attention upon the central nervous system throughout the course of the disease, and if accepted, offers the suggestion for examination of the cerebrospinal fluid for evidence of inflammatory reaction.

This leads to our main thesis, namely, that every case of syphilis is to be considered from the standpoint of the affection of the nervous tissues. It needs no argument to sustain the statement that our best endeavors should be directed towards the prevention of the involvement of the nervous system, rather than the cure of the condition after it has become advanced; and hence, the interest of the neuropsychiatrist in syphilis from its incipiency until the death of the person affected. It is the business of every physician to prevent the neuropsychiatrist from entering into professional relations with a syphilitic patient, by preventing any symptoms that would bring the patient to the neuropsychiatrist. It is true that in the past, when mercury and iodides were the doctor's only specifics for syphilis, certain cases developed paresis, tabes, and cerebrospinal syphilis after what was considered thoroughly adequate treatment. Fournier, and Mattauscheck and Pilcz have presented adequate evidence to show that the better the treatment the less the probability that the patient will develop nervous manifestations. Just how much better the results will be with the use of arsphenamine in addition to mercury and iodides, it is not at present possible to state, but all expectation is that they will be infinitely more satisfactory.

In the remaining portion of the time, attention will be directed to those cases which, by some unfortunate circumstance, have developed neurosyphilis. The methods and results of treatment will be indicated. It is also pertinent to draw attention to the fact that in order to follow perfectly any case of syphilis through its treament course, a lumbar puncture and examination of the spinal fluid is essential. On this point there can be no doubt, and the following cases will focus the attention upon lumbar puncture and examination of the fluid.

The main types of neurosyphilis occurring in the secondary period are the acute meningitis and meningoencephalitis, and the vascular cases.

CASE 1. Meningitis or Meningoencephalitis in the Secondary Period: Mr. Fred C. was a man 49 years of age, who developed a primary lesion in July, 1915. Shortly after the appearance of the primary sore, he was put on treatment consisting of injections of mercury, and potassium iodide by mouth. He had four injections of salvarsan. In December of the same year, that is about five months after the appearance of the primary sore, he had a convulsion. He went to work the following day, but was reported as acting strangely and not able to work. He had a second convlusion, complained of very severe headache, was quite somnolent, on one occasion sleeping for twenty hours. He was brought to the Psychopathic Hospital on the third of January, 1916.
At this time he was found to be dull and lethargic: there was no emotional reaction; he failed to recognize the physician who had been treating him when the physician called upon him in the hospital. Aside from having no control of his sphincters, which was apparently a psychic phenomenon, the neurological examination was entirely negative. The examination of the blood showed a strongly positive Wassermann reaction. The spinal fluid also gave a strongly positive Wassermann reaction. There were 41 cells per cmm., globulin 3+, albumin 4+, gold sol 5555555310, the so-called paretic reaction. This was a case of neurosyphilis of the meningitic or meningoencephalitic type, occurring in the secondary period of the disease, characterized by convulsions, mental hebetude and confusion. It should be noticed that the neurological examination in this case was essentially negative, thus emphasizing the fact that many cases of neurosyphilis do not show physical signs which permit the diagnosis of nervous system involvement. An examination of the spinal fluid was of the utmost diagnostic importance. The patient was immediately put upon arsphenamine injections. He received two injections a week, the average dose being .6 of a gram. At the end of four weeks, that is, after about eight injections of arsphenamine, his spinal fluid was essentially negative, and he was symptomatically recovered. In a very short time his blood Wassermann also became negative, and now after a period of four years, he is symptomatically well. His blood and spinal fluid were last examined in April, 1919, and were negative.

CASE 2. Meningitis of the Secondary Period: James S. was a young man 28 years of age. He gave a history of a chancre in August, 1916, followed by a secondary skin eruption.

He had four injections of salvarsan and three of mercury, receiving the last injection of salvarsan in December. About this time he began to complain of severe headache and some pain and stiffness in the neck. Two weeks later dizziness became prominent. and in another week he complained of difficulty in hearing. Shortly after this progression of symptoms, he suddenly became very excited, then entirely delirious. He was brought into the hospital in a confused, delirious state in January, 1917, about five months after his chancre. The symptoms were those of an acute meningitis. There was stiffness of the neck, retraction of the head, and Kernig's sign. The pupils were unequal. The Wassermann reaction was positive on the blood and spinal fluid. There were 228 cells per cmm. Globulin was reported 4+, albumin 4+, and the gold sol reaction 5555542100. He was immediately put under treatment, made a very rapid clinical improvement, and was allowed to return home in eight days. Treatment was continued. A month later another spinal puncture showed that the Wassermann was somewhat weaker in the spinal fluid; there were but 35 cells per cmm., globulin 2+, albumin 2+, gold sol reaction 4222210000. He had sixteen injections of arsphenamine, approximating .6 gram each, during a period of three months. He then left the state, and had no treatment except mercury by mouth for the next year. He was again seen a year after his first appearance at the hospital. He was symptomatically well, and the blood Wassermann reaction was negative. The spinal fluid was not obtained. Despite the negative Wassermann reaction of the blood and the excellent clinical condition of the patient, this case cannot be considered adequately followed, because the condition of his spinal fluid was not obtained. It is highly possible that this might be positive and then further treatment would be indicated, preferably intraspinous. Even if it were negative, he should have further fluid examinations at intervals of about a year. We know from experience that a negative fluid may be found positive at a later date.

Case 3. Vascular Neurosyphilis of the Secondary Period: This case is illustrative of the vascular lesions of the secondary period. The patient was a young man 28 years of age, who was brought into the Psychopathic Hospital on July 4, 1915, in a delirious condition, with evidence of a left hemiplegia. The history is dramatic and illuminating. Some three months previous to his admission, he had developed a sore on his lip which was diagnosed as a chancre. He was given treatment by mouth only. He began to complain of headache and dizziness. As he did not seem to improve, he changed to another clinic, where the diagnosis of syphilis was again made, and a date given for the injection of arsphenamine. Upon reporting for his treatment, he was told that on account of the shortage of salvarsan,—this being the period when salvarsan was difficult to obtain and before we were being supplied with the American-made drug,—he would be given other treatment and the salvarsan would be kept for the more infectious cases. A few days later he had an apoplectic attack which brought him into the hospital. The general symptoms of a left hemiplegia, with confusion, delirium, loss of sphincter control, and the like, were present. The Wassermann reaction was positive in the blood and spinal fluid. There were 176 cells per cmm., globulin 3+, albumin 3+. Treatment was at once instituted. The patient was given semi-weekly injections of salvarsan, weekly injections of mercury salicylate, and potassium iodide by mouth in doses of 100 grains three times a day. He remained stuporous for about two weeks and then improved. The spinal fluid began to clear up after about 2½ months of treatment, and a year later was entirely negative. The patient, however, was left with a residual hemiplegia. Mental recovery was complete. The results of therapy were all that could be expected in this case,—an apparent complete sterilization of the process, negative blood and spinal fluid, and complete clinical improvement except for the residual defect. Our only regret is that treatment was instituted too late. If it had been instituted before the stroke, he would, presumably, have cleared up without any defect. The chief point to be made is that here was an indication for lumbar puncture,—headache and dizziness,—which was entirely overlooked because of the stage of the disease, *i.e.*, early secondary period.

At times it is not possible to get a history of syphilis and one must depend upon the clinical signs and the laboratory findings, especially the spinal fluid examination, to make the diagnosis.

Case 4. Fainting Spells Due to Neurosyphilis: Margaret Mc. was a girl 28 years of age, who came to the clinic because of fainting spells. These had persisted for some months and had been treated lightly by her physician, as merely feminine fainting attacks. The history brought out the significant fact that following several of these attacks she had been aphasic. The physical examination, both as to viscera and the neurological findings, was entirely negative. She could give no history of syphilitic symptoms. However, the blood and spinal fluid gave strongly positive Wassermann reactions. Under antisyphilitic treatment, the seizures disappeared and the patient rapidly gained in weight and in general health. In fact, after eight injections of arsphenamine given in a period of one month, the spinal fluid became entirely negative. The Wassermann reaction remained positive, however, and on this account, she received courses of treatment during the next three years. It was not possible, however, to obtain a negative blood Wassermann. She has continued in the best of health.

In the foregoing cases, the absence of definite neurological symptoms has been emphasized, and the fact that a lumbar puncture was essential in order to prove definitely the involvement of the nervous system. It may be argued, however, that in practically all of these cases there were symptoms which should have attracted the attention to the nervous system. In the two following cases, however, there were no symptoms or signs leading to suspicion of the nervous system.

Case 5. "Latent Neurosyphilis": Mary McG. was a girl 20 years of age, who had led a fairly riotous life. She was under the charge of the Girls' Parole Department, and because of their inability to keep her on the straight and narrow path, was sent to the Psychopathic Hospital for examination. The routine Wassermann examination was reported positive. She gave no history of primary or secondary symptoms and, as indicated above, her physical examination, including the neurological, was essentially negative. As a matter of routine in a syphilitic case, a lumbar puncture was performed, which disclosed a strongly positive Wassermann reaction; globulin 1+, albumin, 1+, 132 cells per cmm., gold sol 4443333221. Sixteen injections of arsphenamine in the following four months were given, and at the end of this time she had a negative blood Wassermann and a negative spinal fluid Wassermann; globulin and albumin were still reported as 1+; there was one cell per cmm., and the gold sol reaction was 4332221100. Treatment was continued, and 11 more injections of arsphenamine were given in the following nine months. After a rest of seven months, another lumbar puncture was performed, which was entirely negative, as was the blood reaction.

Case 6. Latent Neorosyphilis—*"Paresis sine Paresi"*: A somewhat similar case is that of Grace T. This patient was the wife of a paretic, which fact, in our minds, was sufficient reason for making a complete examination. This examination, as far as the physical and neurological findings were concerned, was entirely negative. However, she had a positive blood Wassermann. This lead to a lumbar puncture which disclosed a strongly positive reaction: globulin 1+, albumin 1+, 34 cells per cmm., and a paretic type of gold sol reaction: 5522211100. We are of the opinion that this woman was on her way to develop the same condition as her husband, namely, general paresis. This is an illustration of the type of case on which the theory of a central nervous system strain of spirochaetes is developed. Whether or not we will be able to hold this case in check by antisyphilitic treatment, it is not possible to prognosticate, owing largely to our paucity of knowledge as to the course of such a case if untreated. This case calls attention to the hypothesis which I hold, namely, that the spinal fluid will show evidences of pathology long before the patient develops symptoms of tabes or paresis. A number of instances of this sort have come to our attention.

The above mentioned cases have all illustrated not only the advisability of lumbar puncture, but in some instances the absolute need of such a puncture if we are going to do justice to the patient. These cases (with the possible exception of the last, which has not been under observation a sufficient length of time to allow one to draw conclusions from it) have shown the very satisfactory results that may be obtained in certain types of syphilis of the nervous system. These results were obobtained by intravenous and intramuscular injections, without the aid of intraspinous therapy. There are, however, cases occurring even in the early stage of the disease which are not so amenable to treatment, and hence far from being so pleasant to treat.

Case 7. Early Neurosyphilis Recalcitrant to Treatment: Jeremiah C. was a most industrious man of 37 years of age, and very ambitious. He was a postal clerk working from 8 in the evening until 3 in the morning, and attending medical school from 9 to 5. In his second year at the medical school, he acquired a primary lesion. Treatment was begun in the early secondary stage. For something over a year, he received weekly injections of mercury. Six months after the primary stage he received one injection of arsphenamine. His original infection occurred toward the middle of 1914. We saw him early in 1917, that is, less than three years after the primary infection. At this time a diagnosis of general paresis was made by the physician who had been treating him. This was made chiefly upon the mental symptoms. He had lost his ability; could not concentrate; was irritable, very emotional, crying at various periods of the day; fearful, unable to go about alone. His calculating ability was extremely poor. His memory was defective. The physical examination showed very little, except what was considered as a sluggishness of his pupillary reactions. He did have a noticeable speech defect. The Wassermann reaction on the blood serum was strongly positive. The spinal fluid also gave a strongly positive Wassermann reaction: globulin 2+, albumin 2+, 8 cells per cmm., a paretic gold sol reaction: 5554332100. From May, 1917, to January, 1919, he received

83 injections of arsphenamine and a few injections of mercury, as well as a considerable quantity of potassium iodide by mouth. At the present time his physical condition is the same as when originally examined. He is working as a bookkeeper and doing fairly well. The serological examination, however, is very distressing. The Wassermann reaction is strongly positive in both blood and spinal fluid. There are 23 cells per cmm.; globulin 1+, albumin 1+, gold sol reaction 5544310000. Since July, 1919, he has received six intraspinous injections, chiefly because of the spinal fluid findings. These have not been improved, however, by this treatment. This case is one of early nervous system involvement which has not shown serological improvement under rather strenuous treatment.

It is only fair to point out that there are a few cases which from the early stages of the disease receive treatment that is adequate for the majority of cases of syphilis, yet they do poorly, and may even develop paretic neurosyphilis.

Case 8. Development of Paresis Despite Early Treatment: Edward S. was 28 years of age when he first came to the Psychopathic clinic. He showed the signs of a fairly well advanced paresis. There was inequality of the pupils with poor reaction. The speech defect was marked. The tendon reflexes were all very lively. The blood and spinal fluid were positive to the Wassermann test; globulin 3+, albumin 3+, 34 cells per cmm., and a paretic type of gol sol reaction: 5555431000. Mentally he was quite apathetic and showed memory and judgment disorder. He had deteriorated considerably. The history showed that he had acquired syphilis about six years previously, at the age of 22. He had at once placed himself in the hands of a good medical man, and had received constant treatment since that time in the form of numerous salvarsan injections, mercury by injection and inunction, and potassium iodide. Despite this treatment, he had developed a definite paretic state. Whether any more vigorous treatment would have staved off this condition is, of course, difficult to say. At any rate, he had developed paresis six years after his infection, despite what is ordinarily considered very adequate treatment, and treatment prolonged much longer than is usual. Very intensive treatment from the time of his appearance at our clinic has not succeeded in producing any real improvement. Something over three years has now elapsed, and he is more dilapidated and deteriorated than when first seen.

Late neurosyphilis again may be considered from the standpoint of therapeutic results. There are cases which do very well and others in which results are not satisfactory. In a general way, this therapeutic division runs parallel to the pathology,—the cases which do well being, on the whole, those in which the lesions are chiefly related to meninges; whereas, those with parenchymatous degeneration are the ones that do poorly. The first group, those giving rather universally successful therapeutic results, represent the cases giving a clinical diagnosis of cerebrospinal syphilis or gumma. The unsatisfactory ones are usually considered under the headings of general paresis, tabes, or vascular neurosyphilis. The late cases, like the early ones, may show comparatively little on physical examination, and again require the aid of the lumbar puncture to establish a correct diagnosis.

Case 9. Therapeutic Results in Meningitis or Meningoencephalitis Occurring in the Late Period: James S. consulted us in his forty-sixth year. For some four or five months he had been feeling badly. He was unable to sleep nights and complained of a general weakness. He stated that he was unable to concentrate his mind on his work, often discarding a job before it was finished. He was suffering from headaches and had become exceedingly irritable. His general intellectual processes were all slow. Physical examination was essentially negative, as was the neurological. The patient, however, gave a history of syphilitic infection twenty years previously. He had been treated for this during a period of three years and then informed that he was cured. The Wassermann reaction was positive on the blood and spinal fluid; globulin 1+, albumin 1+, 36 cells per cmm., and a weak gold sol reaction: 0012343100. This patient had been thoroughly convinced that there was no hope for him and that he would undoubtedly go the way of paresis. Intensive intravenous treatment, assisted by a couple of intraspinous injections, produced a most satisfactory result. The patient became symptomatically well, and now has a negative blood and spinal fluid. We would again emphasize that there was nothing in the physical examination to suggest neurosyphilis. It was rather significant to note that in this case only one positive Wassermann was obtained on the blood serum. After two injections of arsphenamine, the Wassermann became negative and remained so. There are many cases of neurosyphilis in which the blood Wassermann reaction is negative.

Case 10. Therapeutic Results in Meningitis or Meningoencephalitis Occurring in the Late Period: The case of Frank M. is somewhat similar to the preceding, with the addition of symptoms relating to the spinal cord. The patient was a man 46 years of age. He admitted a primary infection twenty years before, for which he received only local treatment. For the past three years he had been complaining of localized pain over the back which was fairly constant. In addition, he had what was called rheumatism. For these conditions he had received treatment from various physicians without help. Recently he began to have slight headaches, lacked concentration, was irritable, ill-tempered, and felt "all in." In his case, as in the preceding, the physical and neurological examination showed nothing of note. He had, however, a positive blood and spinal fluid Wassermann, 56 cells per cmm., globulin and albumin in excess, and a mild gold sol reaction: 0011332110. Intravenous arsphenamine had an almost miraculous effect. The pains of which he had been complaining for several years disappeared after the second injection and there has been no recurrence of them for the succeeding year and a half. He now feels entirely normal. The spinal fluid has shown a similar improvement, but is not negative, as the Wassermann is very slightly positive and the gold reaction still positive.

These two cases represent the very satisfactory results that may be obtained in late neurosyphilis of a certain type. It must be borne in mind that these are the cases which have always been recognized as reacting very satisfactorily to antisyphilitic treatment. They are the meningitic types.

The vascular type of neurosyphilis, whether seen in the early secondary stage or late in the disease, is much less satisfactory in many ways, chiefly because of the damage which is likely to occur from thrombosis or hemorrhage, which causes an irreparable destruction of tissue. However, many of these cases can be greatly benefited, at least in so far as preventing a continuation of the destructive processes.

CASE 11. Vascular Neurosyphilis of the Late Period: George F. admitted a syphilitic infection 17 years before he was seen at the clinic. Until just before we saw him, he had been entirely well. There had been no symptoms of any sort to bring him to the attention of the physician. His was an apparently benign case, but this benignancy was apparent rather than real. Syphilis was at work, although not recognized. In October, 1916, he suddenly had a shock, resulting in left hemiplegia. The blood and spinal fluid were positive to the Wassermann test. There was pleocytosis, globulin and albumin in excess, and a positive gold reaction in the spinal fluid. The spinal fluid became normal after about 18 months of continuous treatment. The blood remained positive during more than three years of continuous and intensive treatment, but has finally become negative. The man, however, is left with a residual hemiplegia, and without question has pathological changes in his cerebral vessels. However, three and a half years have elapsed since his shock and he has had no new trouble. It may be pointed out that cerebral arteriosclerosis of syphilitic origin is no contra-indication of antisyphilitic treatment of arsphenamine or mercury. This man, as many others of our patients with cerebral arteriosclerosis or vascular changes, has been subjected to intensive and long continued arsenic and mercury therapy, and has shown marked improvement as a result, with no untoward symptoms from the use of these drugs.

The treatment of tabes and paresis is a much more difficult and less satisfactory matter. Until the introduction of salvarsan, the vast majority of physicians considered these diseases as entirely hopeless as far as any therapeutic interference was concerned. Since the introduction of salvarsan and the intraspinous technic of Swift and Ellis, much attention has been paid to tabes, and, in my opinion, with very satisfactory results. It seems to me that there can be no gainsaying the fact that many cases of tabes and paresis are markedly improved by therapy. In some cases intravenous injections of arsphenamine are sufficient to produce very satisfactory results. Other cases, which do not do well under this form of treatment. respond quite satisfactorily to the combination of intraspinous and intravenous theropy. There are still a goodly number of cases, especially of the paretic type, which do not show any improvement under our modern methods of treatment. Here, as elsewhere in medicine, so much depends upon an early correct diagnosis. If one is able to obtain the cases of tabes in the early period, sometimes good results are to be expected. Later, the results are less favorable, but even in the so-called paralytic stage of tabes one at times sees the most gratifying and striking improvement.

(To be continued.)

A CONTRIBUTION TO THE KNOWLEDGE OF CYSTS OF THE JAWS.

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CYSTS are of comparatively frequent occurrence, in both the maxilla and mandible. They usually escape notice until they have attained large proportions, and even then are not always discovered. The teeth involved are often treated for peridental abscess, or pulp disease, before a correct diagnosis is made.

Two types of bone cysts may be distinguished. One, originating from the dental follicle, is called a *follicular cyst;* the other, resulting from a so-called blind abscess or granuloma, at the root apex of an infected tooth, is termed a *radicular cyst.*

The *follicular* cyst is caused by abnormal development of a tooth follicle during the developmental stage of the tooth. It occurs most frequently in connection with a misplaced unerupted or supernumerary tooth. It may, however, be formed from the enamel organ without a tooth being developed. If the cyst contains a tooth it is called *dentigerous.* (Figures 4 and 5.) More than one tooth, either well formed or rudimentary, may be found in a cyst. Sometimes only masses of calcified tooth particles are produced, and these may be composed of enamel, dentine, cement or dental pulp; also occasionally of bone. Calcified tissue, however, is not always formed, and microscopic examination may show a mass of enamel organs with cylindrical epithelial cells. Typical ameloblasts are sometimes developed and these may be found laying down enamel. This is spoken of as a *cystic adamantonoma.* Dentine and cement formation may also be seen, in which case the lesion is called a *cystic odontoma.* (Figures 6 and 17.)

The cyst sac is usually composed of a fibrous membrane, lined by epithelium, which may be in a single layer, stratified or epidermoid in character. The liquid contained in the sac is clear and straw-colored, originating principally from a secretion by the epithelial cells. Cholesterin crystals are usually present and, if infection takes place, the liquid is contaminated by pus.

The *radicular cyst* is of inflammatory, infectious origin and is developed from a blind abscess or granuloma, a chronic inflammatory lesion, which forms at the apex of an infected tooth. (Figure 1.) Epithelial rests, remnants from the enamel organ, are frequently found in the normal peridental membrane and, through irritating influences, such as those exerted by chronic inflammation, these are caused to proliferate, forming chains of epithelium, which grow like a net-work through the lesion. (Figure 18.) Having a tendency to grow between vital and necrosed tissue, the epithelium soon forms an entire lining of the abscess cavity. Accumulation of broken-down tissue and exudates causes extension of the cyst. It often grows to tremendous size at the expense of the bone, which disappears through pressure absorption. The bone may become so thin that a cracking sound can easily be heard on palpation.

In the upper jaw, cysts may encroach on the nasal cavity or develop inside the maxillary sinus, sometimes filling it almost completely, a condition which is very difficult to diagnose.* In the lower jaw they are found in the body of the mandible, as well as in the ramus. (Figures 14, 15 and 16.)

Radicular cysts sometimes have apparently no connection with a tooth root. (Figure 16.) In such cases the guilty tooth may have been extracted, the cyst having escaped notice at the time, or there may have been left in the jaw an epitheliated granuloma, which developed into a cyst later.

The cyst sac (Figure 19) usually has an epithelial lining of very simple nature, the underlying structure consisting of inflammatory granulation tissue of very fibrous composition, containing large numbers of lymphocytes and plasma cells and, nearly always, cholesterin crystals. The fluid usually looks like pus. Detached cholesterin crystals give it a characteristic appearance, the color varying according to the type of contamination.

SYMPTOMS.

Local symptoms, as a rule, are absent, in either type of cyst, up to a certain stage of the development. Just how long it remains unnoticed depends a good deal on its location and rapidity of growth, and upon accidental changes in the pathological development. Symptoms may appear as changes in the facial contour, such as swellings on the cheek or side of mandible, on the hard palate or under the lip. In extreme cases of the latter, the lips cannot be brought together at all. In one case, which came under the writer's observation, the patient noticed a sensitive spot on the skin of the cheek over the affected part, due to perforation of the bone at this point. Distention of the cyst is often evidenced by indefinable, obscure pressure, and occasionally causes displacement of some of the teeth. Pain is comparatively rare, but in two cases I have seen complete paresthesia of the lower lip, due to involvement of the inferior alveolar nerve. The lack of a tooth often leads the parent of a child to recognize that something is wrong. A cyst with an opening into the mouth is noticed by the discharge of its excretion, which causes a bad taste and a disagreeable odor in the mouth. Secondary infection, which occurs through the diseased pulp canal or pus pocket of an adjacent tooth, frequently causes symptoms of acute inflammation, such as we see in acute or subacute dental abscesses and, subsiding, may leave a fistula on the gum, which often leads to faulty treatment.

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* See Boston Medical and Surgical Journal, Vol. clxxix, No. i, pp. 17-20, Fig. 20, July 4, 1918.

General symptoms are uncommon in cases of follicular cysts. The infectious type, which includes all radicular and secondarily infected follicular cysts, may be the cause of focal infection or general toxemia.

DIAGNOSIS.

As there is not always external evidence of this condition, and as the lesion may be developing for a long time before symptoms appear, it is generally difficult to make an early diagnosis. Cysts which cause changes in the visible surfaces of the jaws are generally more easily recognized than those encroaching on the nasal cavity or maxillary sinus. Differential diagnosis is easier in the upper jaw, where the characteristic parchment-like condition of the bone, producing a cracking sound on pressure, is much oftener found than in the lower jaw. Here the massive cortical plates present considerable resistance to absorption and outward extension of the lesion.

Distinguishing diagnosis must be made for a solid tumor, and this is best accomplished by puncturing the lesion at a convenient place with a strong, sharp needle, attached to a glass syringe and aspirating the liquid. It is, however, important to remember that sarcomata occasionally develop from the cyst sac.

Cysts which develop in the cavity of the maxillary sinus are hard to recognize and often present, on clinical examination, the same condition as that of maxillary sinusitis. In suppurating cysts with a sinus into the antrum, there may even be discharge through the osteum.

ROENTGEN DIAGNOSIS.

The discovery of cysts is now very often made in routine roentgen examination of the jaws, but in suspected cases it is absolutely essential to take pictures, both as an aid to differential diagnosis, as well as to get more exact information regarding the size, shape and location of the lesion. The roentgen picture will show the relation to the teeth and neighboring structures, such as the inferior alveolar canal, antrum and nose; it will disclose much of the causative factor and be a valuable guide for the operative technique. Figures 1, 2 and 3 show three roentgen films which are typical pictures of some of the conditions which should be distinguished from cysts; namely, ordinary chronic alveolar abscess, chronic granulating ostitis and chronic osteomyelitis.

The roentgen examination should be made on large films or plates, as the small ones seldom cover more than part of the lesion. The cyst cavity appears as a black area on the negative, because it decreases the resistance, which in normal bone conditions, is put in the way of the rays. The bone immediately surrounding the cavity, however, is cortical and dense, and so we find the typical picture of a cyst showing a light, but distinct surrounding line. This is well shown in Figures 4, 5, 6, 12 and 14. To diagnose cysts in the antrum, both frontal and side plates are necessary.

TREATMENT.

The principle of the treatment of both radicular and follicular cysts is essentially the same. The operation should be intraoral whenever possible, and radical enough to insure against a return of the trouble. After detaching the mucous membrane and periosteum, an opening, as large as possible, is made through the bone, removing one entire wall of the cyst, so as to expose the entire cavity. The writer always removes the cyst sac completely with all its contents, no matter what type is being dealt with. In the case of follicular cysts this is especially important as a preventative against recurrence. All unerupted teeth connected with and all devitalized teeth extending into the cavity should be extracted. In small cysts the bone cavity may be allowed to fill with a blood clot, but in larger ones a different procedure is necessary. After all sharp, ragged edges of bone are carefully removed, as much as possible of the inner wall of the bone cavity

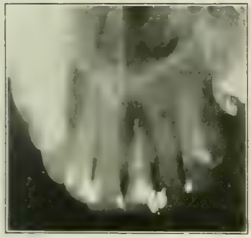

Fig. 1. Chronic alveolar abscess.

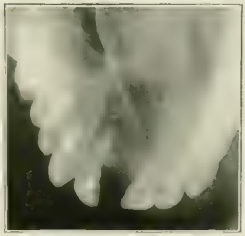

Fig. 2. Chronic granulating ostitis.

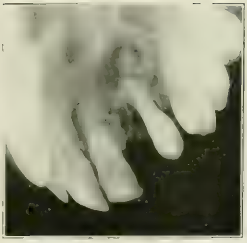

Fig. 3. Chronic osteomyelitis.

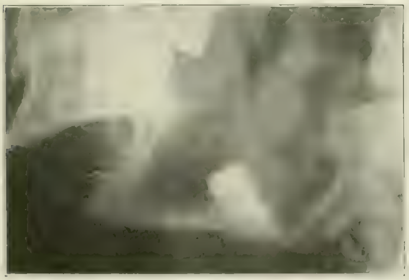

Fig. 4. Dentigerous cyst of the lower jaw. Case of S.

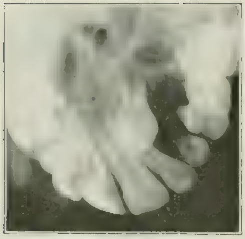

Fig. 5. Dentigerous cyst in the upper jaw. Case of *W. W.*

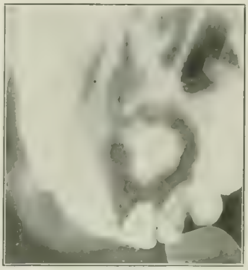

Fig. 6. Cystic odontoma. Case of *R. W.*

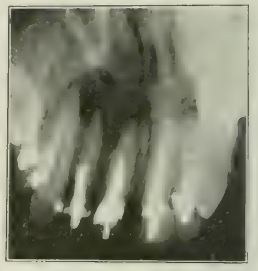

Fig. 7. Radicular cyst in the upper jaw. Case of *M. E. H.*

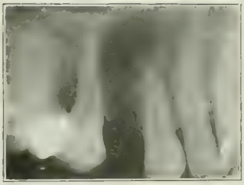

Fig. 8. Small cyst in the upper jaw. Case of *L. A. H.*

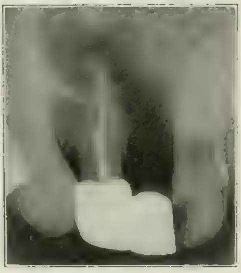

Fig. 9. Small cyst in the upper jaw. Case of *H. H.*

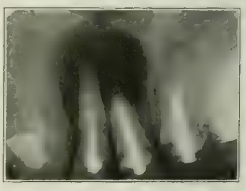

Fig. 10. Small cyst in the upper jaw. Case of *G. H. H.*

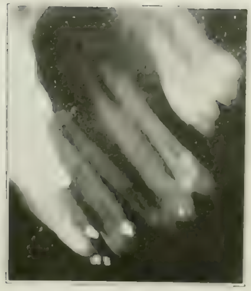

Fig. 11. Large [illegible] cyst. Case of *H. G.*

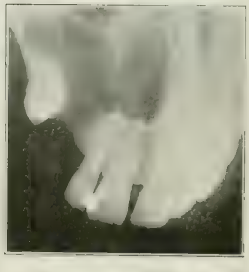

Fig. 12. Large radicular cyst. Case of *C. L. B.*

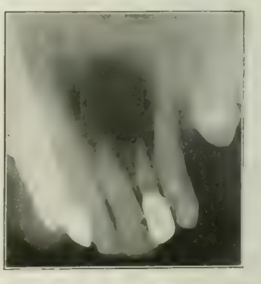

Fig. 13. Large radicular cyst. Case of *N. L.*

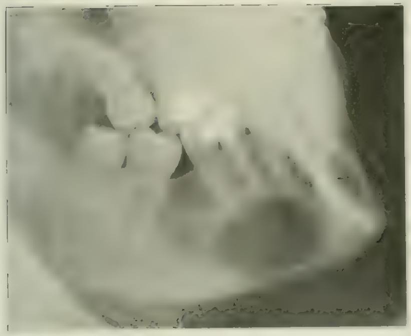

Fig. 14.—Large radicular cyst in mandible. Case of *J. L. G.*

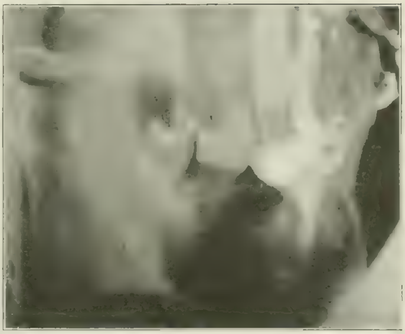

Fig. 15.—Large radicular cyst in mandible. Case of *J. C. [illegible]*

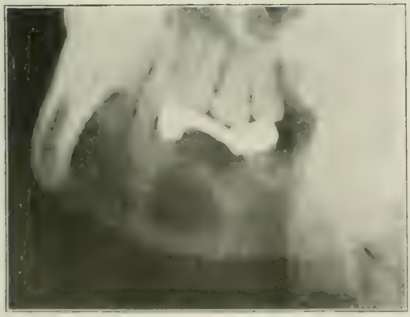

Fig. 16.—Large [illegible] cyst [illegible] in ramus of mandible. Case of *F. K.*

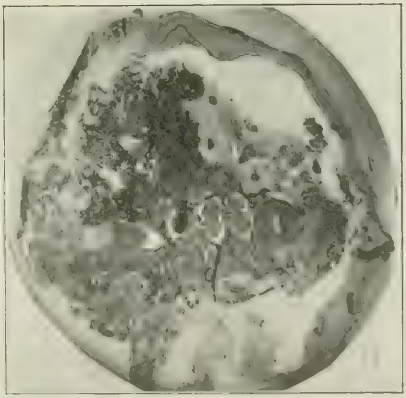

Fig. 17.—Photomicrograph [illegible] [illegible] tumor of fig. [illegible]

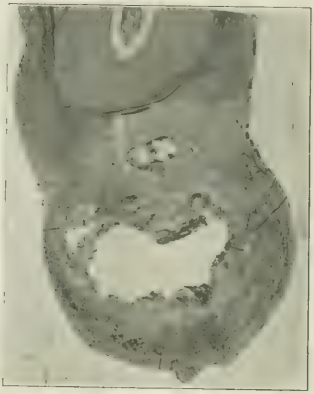

FIG. 18. Photomicrograph of root apex with chronic abscess, showing proliferation of epithelium.

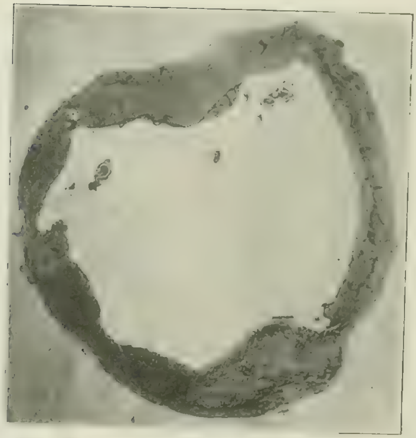

FIG. 19. Photomicrograph of cyst sac from a radicular cyst.

is covered with the flap of mucous membrane and held there by a packing of iodoform gauze. This is removed after forty-eight hours and the cyst cavity then forms part of the mouth. The wound is soon entirely covered by mucous membrane, leaving a depression varying in depth. The patient should be instructed to irrigate it after each meal, especially if in the lower jaw, where food is more liable to be retained. The opening becomes gradually shallower until it entirely disappears.

If prosthetic appliances to replace missing teeth are supplied at once they must be so constructed that they do not interfere in any way with the healing process and will not be a hindrance to the patient's effort to keep the wound clean.

CASE REPORTS.

Si. A man about sixty-five years old, complained of having a discharge with an offensive odor in his mouth. Examination showed a sinus in the third molar region on the left side of the mandible. The second and third molars were missing. The second molar had been extracted a short time before, but this did not improve the complaint.

Roentgen examination by means of a small film showed a dark area at the root of the first molar, but no impacted tooth. A large plate was then taken, which is reproduced in Figure 4. This shows a large dark area extending to the lower border of the mandible and almost to the angle of the ramus. The area is surrounded by a distinct light line, the typical picture of a cyst. The wisdom tooth is found near the angle of the jaw. Diagnosis—Dentigerous cyst, infected from the mouth. Operation advised, but refused by the patient.

W. W. A boy nine years old. His mother first noticed a swelling in the left upper side of the jaw in the cuspid region about one year previous to the consultation. She thought it was the cuspid about to erupt. There was no pain or soreness. A little later the first temporary molar started to feel tender. It was filled, treated, and refilled by a dentist, and finally fell out. A few weeks ago a slight swelling on the left side of the face was noticed and his physician referred him back to his dentist, who sent him to the writer. Physical examination revealed little besides the swelling on the face. The alveolar process showed no signs of a cyst. Roentgen pictures, however, revealed a large dentigerous cyst containing an unerupted cuspid, apparently encroaching somewhat on the maxillary sinus and being located between the alveolar process, the nasal cavity and the palatal process. (Figure 5.)

The operation was performed at the Newton Hospital, a general anesthetic being used. After extraction of the temporary cuspid, brown fluid, containing cholesterin crystals, escaped through the incision. A large semicircular incision was made on the gum and the cyst sac removed. The permanent cuspid at first could not be detected, but was finally located in the nasal wall and could be taken out easily after some of the overlying bone was cut away. The cyst had no connection with the antrum or nose. The wound was dressed in the usual manner and the flap fixed to the bottom of the cavity by means of a dressing of iodoform gauze. The left upper first bicuspid, which was about to erupt, was left in the jaw, although part of the root was exposed. The healing process was uneventful and after a few days the patient was dismissed with instructions to wash the cavity with a syringe after each meal. One month later, when the boy was seen again, about two-thirds of the cavity had filled in with healthy granulation tissue.

R. W. A boy sixteen years old. The patient noticed a swelling under his upper lip for several months, the left upper lateral and central incisors being somewhat tender to touch. His dentist opened the left upper lateral incisor, removed the pulp and treated the root canal. Whenever the root canal dressing was removed a yellowish fluid escaped from the tooth. The root canal treatments failed to help the condition and the gum was lanced several times without result. The patient was sent in for consultation on November 8, 1918, at which time a roentgen picture (Figure 6) was taken, and from this and the clinical evidence a diagnosis of cystic odontoma was made and an operation advised.

This was performed with conduction anesthesia. The teeth involved, namely, the left upper central, lateral and first bicuspid were extracted; then a U-shaped incision was made on the labial part of the gum. The mucous membrane and periosteum were levated, exposing the bone, which in this place was very thin. Removal of the entire outer bony wall of the cyst exposed the cyst sac, from which the fluid had escaped when the teeth were extracted. It still contained, however, a large, solid calcified mass, clearly shown in Figure 6. The sac, with its contents, was completely removed, the mucous flap was pressed into the bottom of the cavity and held in place by a packing of iodoform gauze.

Pathological examination showed a fibrous membrane, infiltrated with leucocytes and plasma cells and lined with simple epithelium. In this was contained the odontoma, consisting of a mass of tooth germs and more or less well-formed rudimentary teeth; also a small amount of newly formed bone. (Figure 17.)

The healing process was uneventful and the cavity, which was very large at first, has almost completely disappeared in less than a year.

M. E. H. The two incisors had been devitalized and crowned a long time ago, there being no other history whatever. Routine roentgen examination revealed a large radicular cyst. The film in Figure 7 shows a cyst cavity involving three teeth, a central incisor with partial root canal filling, a lateral incisor with good root canal filling and a cuspid with no signs of root treatment. The latter tooth had probably become involved only recently, through lateral extension of the lesion.

The teeth were extracted and the cyst sac removed *in toto,* as in the previous cases.

J. A. H. Young woman complaned of tenderness in the bicuspid region of the upper jaw. The right upper first bicuspid, a dead tooth, had been extracted previously without giving the patient relief.

Roentgen examination showed a small cystic cavity. The apex of the cuspid was seen to protrude into it. It was, however, closely connected with the alveolar socket of the extracted tooth. (See Figure 8.)

Diagnosis: Small radicular cyst, due to infected first bicuspid, previously extracted.

H. H. Young man; complained of pus discharged from sinus on gum over right upper lateral incisor. The central incisor had been extracted and a bridge was constructed to supply the tooth.

Roentgen examination showed a cystic cavity, partly connected with the socket of the extracted tooth and the apex of the lateral incision protruded into it. The tooth showed no signs of root canal treatment, but the pulp was probably infected.

Diagnosis: Suppurative radicular cyst. Treatment was started by removal of the infected pulp and sterilization and filling of the root canal. A roentgen film, which was taken at this stage, is shown in Figure 9.

Under conduction anesthesia an incision was made, and after removing the cyst sac, the apex of the tooth which protruded into the cyst cavity was amputated. After application of iodine, a blood clot was allowed to fill in and the wound was closed by suturing. A roentgen picture, taken after four months, showed complete filling in of bone.

G. H. H. This patient had a swelling and a sinus, which discharged pus on the gum over the front teeth. The teeth had been devitalized and treated seven years before and the swelling had been noticed for about seven months. He stated that an opening had appeared two weeks previous to the consultation and a large amount of pus-like fluid had escaped. A roentgen film (Figure 10) shows a large radicular cyst, into which extend the apices of the two upper left incisors. The operation consisted of extraction of the teeth and cutting away of the alveolar septa to give access to the cyst; the sac was removed with curettes. The wound was irrigated until it filled in with healthy granulation tissue.

H. G. Man of middle age; gave a history of having periodical headaches over the left eye. His dentist removed the pulp from the first bicuspid and extracted the second bicuspid, without improving the condition. On examination a hard swelling was found on the side of the upper jaw. A roentgen film (Figure 11) showed a large cyst cavity with a cuspid and bicuspid involved. A large amount of pus-like fluid could be aspirated through the socket of the extracted tooth. Diagnosis—Infected radicular cyst.

After extraction of the cuspid and bicuspid and removal of the outer, bony wall of the cyst, the sac could be removed. The cavity was found to extend a considerable distance into the maxillary sinus. The bony wall, separating the sinus from the cyst cavity, was perforated in one place, but the membrane lining the antrum was intact. The gum flap was pressed into the cavity with an iodoform dressing. Later the cavity was left open, the patient being directed to irrigate it. The healing process was normal and the patient, when seen seventeen months later, said he had been entirely relieved of the headaches since the operation.

C. E. B. Middle-aged woman; complained of indefinable dull pressure in the right side of the upper jaw. At times she noticed discharge of pus on the gum, which, for a while relieved the pressure. Several teeth had been extracted at one time or another, with only temporary relief. Examination showed a large swelling on the entire right side of the hard palate. A yellowish fluid was released when the alveolar process was punctured through the socket of one of the extracted teeth. Roentgen examination by means of films and large frontal plates revealed an enormous cystic cavity in the palatal and alveolar processes of the upper jaw, encroaching on the maxillary sinus to a considerable extent. The cyst was probably caused by the infected teeth, previously extracted, and was a true radicular cyst of extremely large dimensions. (See Figure 12.)

The operation was performed under a general anesthetic at the Brooks Hospital. The three teeth involved were first extracted; then a large incision was made along the alveolar ridge, from the tuberosity to the median line. The palatal mucous membrane was elevated, with the periosteum attached, after which the thin bone, which caused the swelling of the palate, was entirely removed. As most of the alveolar process had been absorbed, an enormous cavity remained, extending way into the antrum. Great care was taken to leave the tuberosity intact, in order to facilitate the wearing of a plate. After removal of the cyst sac the palatal and buccal mucous membranes were turned into the cavity and fastened with two or three sutures, being brought into contact with the bone by means of a large packing. The patient was dismissed after five days, with directions as to the care of the wound. When seen again after three months, the cavity had already filled in to a surprising extent and six months after the operation the healing had advanced so far that a prosthetic appliance could be constructed.

N. L. Middle-aged man; stated that three weeks before the consultation his face had become swollen on the side of the nose and under the eye. There was no pain, but a great deal of inflammation, so that finally his eye closed up. A sinus had formed and was discharging pus below the inferior border of the orbit. Roentgen examination (Figure 13) showed a large cavity in the upper jaw and a lateral plate, which was taken at the same time revealed a bulging of the entire infraorbital surface of the maxilla. Three teeth were involved. A diagnosis of radicular cyst with suppuration, due to secondary infection, was made. The operation exposed an extremely large cystic cavity extending to the nasal wall, the floor of the orbit and the maxillary sinus. There was, however, a bony wall separating it from the antrum. The healing process was rapid and uneventful.

C. B. G. Had suffered dull pain in lower jaw for seven years and at present has numbness in left side of lower lip and a bad taste in the mouth. Had several roentgen pictures taken, but no cause was found. Further roentgen examination showed a large cyst in the ramus. In the negative, a characteristic white line was seen surrounding the lesion. A very dark area was revealed in the region of the post-molar triangle. After an incision was made over the post-molar triangle, a perforation of the bone was revealed, which appears in the roentgen picture as a very dark area, about the size of a pea. The bone over the post-molar triangle was cut away, and a large cyst cavity, involving the ramus from the sigmoid notch to the lower border, was exposed. The cyst sac communicated with the socket of the wisdom tooth and contained a great deal of pus and cholesterin. The patient was again seen after three years, and a new roentgen showed complete healing. The symptoms had entirely disappeared.

J. T. G. Patient complained of a tender place on the outside of the face, especially noticeable when shaving. Roentgen examination showed a large cyst cavity probably originating from an abscess on the right lower first bicuspid, both the neighboring teeth having become involved. A small area, still darker in the roentgenogram, was seen immediately under the second bicuspid. (Figure 14.) The operation was performed under conduction anesthesia. The cyst cavity was found to be filled with pus, containing cholesterin and lined by a membrane, which was covered with epithelium. The cyst was located between the two bone plates, in the outer one of which there was a perforation, showing in the roentgen picture as the small dark area under the second bicuspid. This is the place where the patient felt the tenderness.

J. C. F. Patient was unusually well until about a year before he was referred for examination of the mouth, when he broke down after a severe attack of the grippe, the symptoms being principally those of a nervous collapse. He was in the South for two months and then returned to work. Had been examined at Johns Hopkins Hospital and was obliged to give up work again and spend about six months in the mountains. While there he had some palpitation and dyspnoea, and was evidently very anemic. For some years he suffered from hemorroids, and on August 17, 1916, was operated upon. Dr. Locke, who took care of him at this time, found the following result of a blood examination: Haemoglobin, 70%; leucocytes, 10,000; red count, 3,000,000. A smear showed a slight degree of achromia. On August 28 the blood count was: Haemoglobin, 85%; leucocytes, 6,000; red count, 5,300,000. On September 18, 1916, the blood count was as follows: Haemoglobin, 85%; leucocytes, 7,000; red count, 5,120,000. The patient at this time had recovered from the operation entirely, and seemed in much better health. The white count, however, seems to have increased again and the red count to have decreased. Roentgen examination showed a large periodontal cyst of the jaw and abscesses about the roots of two or more teeth. About sixteen years ago the patient had had an acute abscess on the left lower first molar, which had to be extracted. A little piece of the root of this tooth was apparently left, and is seen in the middle of the cyst. (Figure 15.) The operation was performed on October 4, 1916, under a general anesthetic. After opening into the cyst, pus which was evidently under pressure, escaped at once. The bone cavity was lined with the usual cyst sac and contained the apex of the first molar. The cyst apparently was developed from the abscess which had occurred years before. The result was very satisfactory. Dr. Locke's report showed the following blood count on October 11: Haemoglobin, 92%; red count, 5,500,000. The patient has been seen several times during the past three years. He has been perfectly well ever since, and the condition of the mouth is perfect.

T. K. Patient complained at various times of an inflammation of the gum under a bridge in the lower jaw. Her dentist had lanced the gum several times. On examination the bridge was found to extend from the second bicuspid to the third molar, and one of these teeth was suspected of causing the trouble. The gum around the bridge was hypertrophied, and pus could be pressed out from a sinus. Roentgen examination (Figure 16) showed that the two bridge abutments were perfectly healthy teeth with normal pulps. A large cavity in the bone between the two teeth presented in the roentgen picture the typical appearance of a cyst. Diagnosis was made of infected radicular cyst. The guilty tooth apparently had been extracted years before, leaving a blind abscess, containing epithelium, or else the cyst was present at that time, but not discovered during examination.

THE MINOR RÔLE OF THE CONDUCTION APPARATUS IN SLOWLY PROGRESSIVE DEAFNESS.[*]

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Surgeon, Massachusetts Eye and Ear Infirmary; Otologist, Massachusetts General Hospital.

The function and relative importance of the conduction apparatus, given a normal end organ and normal hearing, is well understood. The physics of sound production, transmission and perception in health obey definite laws that are accepted by all aurists in principle, if not in detail. The object of this paper is to ask your consideration to the relation of the conduction apparatus to certain pathological conditions that have resulted in, or are causing, deafness.

Our present conception of the etiology of non-suppurative deafness has been influenced by the gradual differentiation of the function of the perception and conduction apparatus. Among the many questions that could not logically be explained by attributing to the conduction apparatus the cause for the progressive loss of hearing through interference with the sound waves, was the difficulty in accounting for the upper part of the scale *always* being lost first. This was usually accompanied by tinnitus that is labyrinthine irritation. Again, in progressive deafness there was a tendency for the hearing test to become equal, until by the time the low limits had been raised to about $512C^2$ the Rinne and low limits would not vary even a few seconds for the two sides. It was not conceivable that the pathology of the Eustachian tube and middle ear could result in equal loss of function in so many cases. Third, when suppuration had resulted in the destruction of the membrana propria, with necrosis and sloughing of the malleus and incus, it was observed that in many cases the hearing was exceptionally good, especially if the process was of the fulminating type. At times, even sound perception might be painfully acute, although the conduction apparatus was disorganized. This leaves only the stapes. Is this indispensable to normal hearing? If we have an immovable stapes with a ,normal end organ this condition, if it were possible, would not preclude fairly good hearing for the spoken voice. When the stapes become fixed in the open window, a sthe result of fibrous bands formed during the course of a chronic non-suppurative otitis media, the perception apparatus has been functionally impaired long before the stapes loses its mobility. When fixation of the stapes is accompanied by profound deafness there is also an associated perception deafness that is more important than the condition of the oval window. It is then outside the conduction apparatus that we must look for the real cause in progressive loss of hearing. In the experience of the writer there is no such thing as a pure conduction deafness. In every case of deafness, in whatever category you may classify it, there is diminished tone perception from the beginning. It is this impairment of tone perception that is the important problem in any attempt to arrest or restore lost hearing. Lastly, it is common knowledge that nerve deafness frequently follows acute and chronic systemic poisons and that certain drugs in full dosage have a disastrous effect on the organ of Corti. These findings make it necessary to reconstruct our otologic concept to conform to the newer pathology, or, as so often happens, confirm our clinical findings but explain the etiology in accordance with our recent views. It is true that certain types of infection show inflammatory reaction that in one case is confined to the mucous membrane, in another to the fibrous tissue and in still others to the osseous elements as end results. These manifestations of involvement of the middle ear are of secondary importance, however, as compared to the question of damage, temporary or permanent, to the organ. Let us take the nomanclature of the last International Congress and try and interpret it along these lines. In the child obstructed with adenoids, or the adult with tubo-tympanic catarrh, the deafness is not due so much to the closure of the Eustachian tube and the interference with the conduction apparatus as such, but rather that the closure of the tube is followed by absorption of air in the middle ear, indrawing of the membrana tympani, inpaction of the stapes in the oval window and labyrinthine disturbance. This is accompanied by tinnitus and a loss of tone perception in the upper part of the scale which is functional for a time, but is ultimately followed by nerve degeneration. To be sure, in a child with adenoids, the low tone limit may be raised temporarily. This becomes normal, however, as the Eustachian tube opens, but the loss in the upper tone limit continues if the loss of hearing is progressive. When, therefore, in a case of chronic catarrhal otitis media the low limits are again raised, the upper limits have been markedly cut down. This would indicate that the progress of chronic deafness was not because of increasing obstruction in the middle ear, but because of further impairment of tone perception.

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[*] Read before the American Laryngological, Rhinological and Otological Society, at Boston, June 3, 1920.

In those cases of (O.M.C.C.) chronic tubo-tympanic catarrh we find not only that the upper tone limits were lost first, but that where the course has extended over a number of years there may be also areas of tone deafness with the lower limits unchanged. These findings are accompanied by a ground glass appearance of the membrana tympani, loss of the light reflex and indrawing. Where the changes in the membrana tympani were characteristic there was no question as to diagnosis. There was a type of case, however, that did not show changes in the membrana tympani and where we were accustomed to find a clean nasopharynx. These cases were classified as catarrhal adhesive otitis media, or, if the deafness was pronounced with changes in the bone conduction, they were called by some, beginning otosclerosis. It was not uncommon to find typical changes on one side and a clear membrana tympani on the opposite side and yet the hearing, after a number of years, might be almost identical. This type of case, whether atypical chronic catarrhal otitis media or not, begins with loss of the upper tone limits and tinnitus. There may or may not be areas of tone deafness. As the disease progresses the hearing gradually tends to become the same on both sides, the tinnitus becomes more high pitched and there may or may not be vertigo. The progress of the disease is not, in the judgment of the writer, influenced very much by the changes in the conduction apparatus. The primary step is a closure of the tube causing intra-labyrinthine changes in the perception apparatus and a raising temporarily of the low limit. The process in the Eustachian tube may then run its course and yet the deafness goes on, influenced by the acute exacerbations of a toxic focus, *i.e.*, after the deafness is once established it is progressive not because of increasing mechanical obstruction from adhesions, tissue thickening or bony deposits in the conduction apparatus, but because of loss of tone perception from damage to the end organ, from the reaction to a definite chronic infection. That the upper conversational limit is first impaired has been confirmed by the audiometer of Dr. Dean.

Silent areas occur so often in non-suppurative otitis media that the hearing test may be misleading. If we happen to test our bone conduction with a fork corresponding to the silent area it would, of course, not be heard or be transmitted to the other side. Even an approximately correct conclusion in regard to hearing cannot be reached without using all the forks from 96^a to $2048C^4$, nor without several tests by the same observer in a given case. As before stated, the upper part of the scale is lost first, and, as we would expect, both air and bone conduction are lowered for certain forks unless there is a concurrent middle ear. for sound waves, produced by the striking of a given fork, are registered in the same part of the perception apparatus, whether passing through a media of air or bone. It follows, then, that with no obstruction in the middle ear any lowering of bone conduction must be accompanied by a lowering of air conduction for the same fork. On the other hand, any obstruction in the middle ear would raise the bone conduction and lower the air conduction for forks below $512C^2$. The higher the fork required to register a lowering of bone conduction the better the prognosis (Miss C. G.). The hearing test alone with all the forks is the only guide in estimating the remaining function in any given case of deafness. This is only a help, for no hearing test and no aural examination now known can tell us whether nerve degeneration has actually commenced. The evidence increases that while we may have pure nerve deafness we never have pure conduction deafness; the fact that some nerve impairment exists in every case of deafness was not recognized, as in the usual tests we rarely resorted to all the forks. The loss of the upper register, whose lower limit is roughly indicated by the whispered voice, is then *prima facie* evidence that the deafness is due to damage to the end organ.

Inspection of the membrana tympani gives us no information as to the function of hearing, neither does it enable us to form any conception as to whether we can hold out any hope for the future. The immobility of the membrana tympani, malleus or incus, areas of atrophy, or even the absence of the membrana propria, do not justify a gloomy prognosis nor give much information that is helpful to the patient. These are end results and unless we have some definite pathology that explains the different steps that have led up to this condition and can determine whether the cause is still active, we are not in a position to do the patient any good.

Etiology. From the experience of the writer the primary infection, so far as the deafness is concerned, is usually in the lymphoid tissue. In children, primarily, in tonsil and adenoid infection. In adults, without regard to age limit, usually in the tonsils, especially the supratonsillar fossa, with secondary involvement of the surrounding lymphoid tissue, especially in the pharynx. These foci date back to the infectious diseases and are subject to repeated exacerbations. Even when there is obvious sinusitis or bony necrosis in the mandible, in the majority of cases there had been a preceding chronic infection in Waldeyer's ring, which apparently started in the tonsil. The lymphatic connection between the supratonsillar fossa and the middle ear is direct, and there is usually a history of sore throats as a child but none of late years.

Prognosis. The writer is willing to admit that he does not know from the first examination whether an advanced case will improve or not. It all depends on the amount of damage to the perception apparatus. The membrana tympani, malleus and incus may be gone and the promontory bare, and yet if this was the result of a sudden explosion of a virulent infection the nerve function would be but little impaired. On the other hand, the membrana tympani may appear almost normal with a progressive secondary nerve atrophy so far advanced that the case is beyond help. It is rarely the case that one ear (usually the one last infected) does not improve. We have much to learn in the treatment of those cases whenever degeneration has actually commenced. After the cause has been removed, whether we can, in these advanced cases, reclaim any lost function by auditory reëducation electricity, the use of strychnine, etc., is still an open question. The removal of toxic foci thoroughly must always be an individual equation. The war experience has taught us that much can be done by perseverence in restoring lost function. In the judgment of the writer, no department of otology offers so much encouragement or so large a field of usefulness as the treatment of slowly progressive deafness.

Treatment. Treatment of the Eustachian tubes, either by bougies or inflation through a septic field, is never justifiable as a routine and never does any good in chronic cases. It can readily be understood that anything causing a secondary pharyngitis would have a bad effect on the hearing. As a matter of fact, the writer has never seen marked improvement in hearing in chronic deafness from any treatment that did not include freeing the supratonsillar fossa of infected tissue, whether this be in patients of ten or sixty-five years of age. Do not try to increase the mobility of the ossicles or pay any attention to the conduction apparatus except to free it of infection. Remember that toxic products are being constantly thrown into the circulation and that the perception apparatus suffers first from toxemia and then from nerve degeneration. In a certain number of cases the writer believes that after all sources of re-infection have been removed much can be done by reëducation of the perception centers. That is, the central end organ does not seem to interpret the sound waves on account of functional disuse. On the other hand, it looks as though the highly specialized nerves, like the nerve of hearing, when degeneration has commenced, was uninfluenced by treatment. Experience has shown that very many cases given up as hopeless, on account of nerve degeneration, were only functionally crippled. These cases will improve with no other treatment than removal of the cause of the deafness. Moreover, these cases are not unusual, for it is the exception if one ear or the other does not gain if the low tone limit is unchanged.

B. O.M.C.C.

S. S., 8 years. School. December 27, 1919. P. H.—T & A operation at Massachusetts General Hospital three years ago. Measles two months ago and since then she has been deaf, with ringing in both ears..

Examination: Ears, A.D.—Membrana tympani indrawn. Dull. No thickening. Ears, A.S. —Membrana tympani indrawn. Light reflex present but not clear. Pharynx—Epipharynx blocked by a large adenoid. Sinuses—Transillumination clear except over ethmoids. Diagnosis—Infective O.M.C.C.

R		*L*
2/25	W.V.	2/25
14/6	R 256C	16/6
—	W	—
64	L.L.	64

Treatment—Adenoid removed under gas.

February 14, 1920—Has had a cold for two weeks.

R		*L*
25/25	W.V.	25/25
20/9	R 256C	15/7
	W$_{>}$+	
40/13	512C^2	45/18
62/22	1024C^3	40/20
22/7	2048C^4	18/10
32	L.L.	32

(Hearing tests made by A. M. A.)

Result: This case improved in hearing distance twenty-three feet without politzerization or any direct treatment of the ears. The noise still continues.

Terminal stage in a case of slowly progressive loss of hearing extending over twenty years.

Mrs. R., 52 years, married. P. H.—Always well. No history of acute infections. Under constant treatment directed especially to the tubes by a competent aurist. No history of vertigo or tinnitus. A. U.—Ground glass appearance. L. R. gone. No areas of atrophy or thickening. No stapes fixation.

Examination: Transillumination negative. No pus in nares. M. M. normal. Septum straight. Breathing free. No infection. Pharynx —Lateral pharyngitis marked but whole pharynx shows a low-grade pharyngitis. Tonsils—Cryptic tonsillar disease and muco-pus in both. Pharyngeal secretions changed and patient gets up every morning to clear her throat and sometimes during the night. P. S.—The chronic focal infection in the tonsil, low-grade pharyngitis and infection of the lymphoid tissue in the mouth of the tube followed by deafness, would seem obvious.

R		*L*
Shout	W.V.	Shout
7/15	R 512C^2	5/15
	W$_{>}$+	
—	Galton	—
256	L.L.	256

1024C^3 faint in A.D.
2048C^4 not heard in A.D.
2048C^4 faint in A.S.

Fulminating case with great damage to middle ears. Marked improvement in hearing (without inflation), because the perception apparatus was not injured sufficiently to be followed by nerve degeneration.

Miss C. G., 28 years. B. Sweden; single; salesgirl. Ref., Dr. N. P. H.—Measles 4 years. Aural discharge from both ears until 15 years old. Then T & A operation and ears were dry until six months ago. Has colds every winter with swellings under jaws and soreness back of ears. No general illness since the measles, but does not feel strong.

Examination: A.S.—O.M.S.Ch. A.D.—Eff. O.M.S. Ears examined by Dr. C. T. P.

Considerable tonsil tissue in supra-tonsillar fossae containing mucopus. Transillumination negative. Band passing from left Eustachian tube to posterior pharyngeal wall. Low-grade pharyngitis.

R		*L*
Shout	W.V.	11/ 2/25
27/45	R 512C^2	28/46
	+$_{<}$W	
256	L.L.	256
N	U.L.	N
R		*L*

A.S.—Directly ahead promontory is covered with granulations of watery pink color. The membrana tympani is entirely absent in the posterior half. Posteriorly can be seen niche of round window. Anteriorly and above remains of malleus. Shrapnel's membrane is covered with grayish membrane. Slight discharge. Diagnosis—O. M. S. Ch.

A.D.—Dry. Horse-shoe shaped perforation involving entire portion of membrana tympani up to anterior and posterior ligament. Malleus intact with lower end tied down to promontory by band of adhesions. Underneath posterior superior border of perforation can be seen incudo-stapedial joint. Along posterior border of perforation can be seen niche of round window. Promontory is covered by mucous membrane. Tinnitus like steam. Diagnosis—Eff. O. M. S.

Treatment: Tonsillectomy at Massachusetts Charitable Eye and Ear Infirmary, October 31, 1919.

Miss C. G.

Jan. 8, 1920.

R		*L*
8/25	W.V.	3/25
7/17	R 256C	16/23
20/32	512C^2	18/30
20/33	1024C^3	21/31
14/10	2048C^4	12/7
128	L.L.	128

Jan. 19, 1920.

8/25	W.V.	4/25
12/21	R 256C	11/21
34/45	512C^2	20/40
32/20	1024C^3	45/33
16/9	2048C^4	19/9
96	L.L.	96

Feb. 17, 1920.

R		*L*
25/25	W.V.	8/25
10/19	R 256C	13/19
43/33	512C^2	35/29
42/30	1024C^3	32/27
10/16	2048C^4	7/10
96	L.L.	64
	+>W	

Feb. 24, 1920.

R		*L*
25/25	W.V.	20/25
9/15	R 256C	9/15
22/17	512C^2	15/33
	+>W	
256	L.L.	64

Result: In this case the conduction apparatus, if compared to a chain, has two or three links missing in its most vital part. The left ear still has a scanty discharge. The patient has had active ear involvement from childhood until 28 years old, and yet the right ear gained 25 feet in four months and the left 19 feet. No inflation at any time. After removal of the tonsils the accompanying infection in the pharynx and tube was treated as long as improvement continued. (Hearing tests made by A. M. A.)

B. O.M.C.C. (Infective.)

September 27, 1919. Miss R. A.; 23 years; in college; home, California. P. H.—For six to eight years catarrhal colds. Last year throat infections. T & A two years ago. Rheumatism in arms and shoulders at fourteen years. Measles at seven years. Four years ago A. D. commenced to be deaf. A. S. one year later. No tinnitus or vertigo. Thinks hearing is not so good as one year ago.

Examination: A. D.—Membrana tympani dull and indrawn. L. R. broken. A. S.—Membrana tympani indrawn. L. R. faint. No areas of atrophy or thickening. Palate pale.

R		*L*
3/25	W.V.	2/25
32	L.L.	32
18/32	R 512C^2	22/37

Treatment: Infection cleared up. No *inflation* or any direct treatment of the ears.

R		*L*
25/25	W.V.	25/25
12/21	R 256C	10/18
27/16	512C^2	28/15
25/35	1024C^3	26/39
14/7	2048C^4	11/17
	W>+	
64?	L.L.	32

Result: From the first test one would hardly have expected the hearing to return to almost normal. The whispered voice improved from three feet to twenty-five feet.

The tonsils were removed two years ago but apparently she had no after treatment for the epipharyngitis and tubes.

Miss A. M. C.; Nov. 26, 1919; single; 38 years. P. H.—Puffing tinnitus in right ear for seven years. Much worse for last two or three years. Slight vertigo. No history of aural discharge. Deafness has gradually developed. Has had an impacted molar removed. Tonsils and adenoid operation; also had tonsillar crypts burned with cautery recently. Duration of deafness uncertain.

Examination: A. D.—O.M.C.C. M.T.—Dull, indrawn. L. R. broken. A. S.—O.M.C.C. M.T. —Dull, indrawn. L. R. broken.

X-ray of sinuses shows slight increase in density over the right antrum. The left ethmoid cells are hazy. Teeth negative. Throat—Low-grade pharyngitis. Tonsil remains, especially in upper part of fossa. Muco-pus present.

Operation December 30, 1919. Fenway Hospital. Tonsillectomy. Right antrum found negative.

Feb. 2, 1920.

R		*L*
11/2/25	W.V.	4/25
0/7	R 256C	0/7
—	W	—
13/33	512C^2	13/26
13/37	1024C^3	25/35
18/9	2048C^4	14/10
512	L.L.	128

March 2, 1920.

R		*L*
1/25	W.V.	25/25
7/8	R 256C	8/7
	W>+	
14/22	512C^2	17/31
26/15	1024C^3	31/39
5/8	2048C^4	7/7
256	L.L.	96

(Hearing tests made by A. M. A.)

Result: In the right ear the lower limit was reduced from 512 to 256. The left ear gained 21 feet for the whispered voice and the low limit was reduced from 128 to 96.

N. H. B.; 42 years; mill superintendent, Maine. January 22, 1920. P. H.—Weight, 210 pounds. Nose broken when a child and deflected to the right. Deformity includes the bony framework. Deviation of septum to right occludes that side completely. Any nasal irritation is now followed by lacrimation, anterior nasal discharge and redness of the nose accompanied by sneezing. Sleeps with his head raised and cannot stand much cold air. Has been growing deaf for seven years. Cannot hear his watch in the right ear by air conduction. Does not consider that his right ear is of any use in conversation. Two sisters are deaf. No general illness.

Examination: A.D. — Membrana tympani dull and indrawn. L.R. broken and faint. A.S.—Membrana tympani indrawn. L.R. faint. No areas of thickening or atrophy. A.U.—Stapes movable.

R		*L*
Shout	W.V.	Shout
N	U.L.	N
0/10	R 256C $W_{>}+$	7/12
2/16	$512C^2$	4/16
27/15	$1024C^3$	22/14
15/5	$2048C^4$	9/5
512	L.L.	256

Treatment: January 31, 1920. Operation at Brooks Hospital: (1) Submucous resection of septum. (2) Refracture of nasal bones and correction of external deformity. (3) Tonsillectomy.

Result: In twenty-five days the hearing for the whispered voice in the *right* ear (which he considered of no use to him for conversation) had gained 25 feet and the low limit had changed from 512 to 256. The left ear had improved three feet. No inflation used. (Hearing tests made by A. M. A.)

Feb. 24, 1920.

R		*L*
25/25	W.V.	3/25
5/10	R 256C $+_{<}W$	5/8
12/16	$512C^2$	5/11
26/18	$1024C^3$	22/30
15/7	$2048C^4$	11/3
256	L.L.	256

(Hearing tests made by A. M. A.)

CONCLUSIONS.

1. There is always a nerve element in every case of so-called conduction deafness of the progressive type.
2. The prognosis in regard to restoration of hearing is dependent upon the perception and not upon the conduction apparatus.
3. Toxic deafness and that due to beginning nerve degeneration cannot be differentiated by any aural examination.
4. Silent areas or islands of deafness are quite common in O. M. C. C.
5. The etiological factor is usually active in the lymphoid tissue as a chronic infection with acute exacerbations.
6. In some cases of long-standing deafness it would seem necessary to reëducate the aural perception centers by exercises, after all sources of infection have been eliminated.

ANNUAL MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

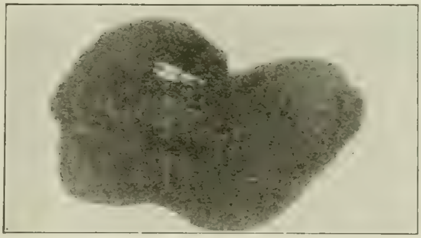
The annual meeting of the American Medical Association will be held in Boston during the week beginning Monday, May 30, 1921, in conjunction with the annual meeting of the Massachusetts Medical Society.

Clinical Department.

A CASE OF HAIR-BALL IN STOMACH CAUSING ACUTE ABDOMINAL SYMPTOMS SUCCESSFULLY REMOVED AT OPERATION.

By Wyman Whittemore, M.D., F.A.C.S., Boston.

The following case is reported on account of the acute abdominal symptoms caused by a hair-ball in the stomach. Cases of hair-ball in the stomach are not extraordinarily rare but I have failed to find one reported that caused acute symptoms requiring immediate operation.



Hair ball of Stomach Removed at Operation. Weight, 212 Gms.

C. S., a girl 13 years old, West Surgical No. 235404, entered the emergency room of the Massachusetts General Hospital February 29, 1920, having been sent to the hospital with the diagnosis of acute appendicitis. Family History—Negative. Past History—Always well, strong and active up to the present illness. Appetite good and bowels regular. Habits—For a year or more she has been in the habit of pulling hair from her head winding it about her finger and then sucking her finger. Her mother does not know whether or not she swallows hair and the child denies it. Present illness—One year ago she began to have periodic attacks of pain in her stomach which she localized near the umbilicus. These attacks were associated with nausea and vomiting. They occurred about every two or three months, lasting a week. There has been no fever at any time, nor any blood from mouth nor with stools. Between attacks there has been almost constant pain in her stomach which was worse when she moved about and disappeared when she lay down. Mother has noticed loss of weight and vigor for the last year. She has not played as much as usual.

The present attack is the most severe of any which she has had. Yesterday she was apparently as well as usual until 2 P.M., when she returned from an errand and suddenly had very acute pain in the abdomen which doubled her up. Her doctor was called and sent her immediately into the hospital. The pain has been constantly severe and she has vomited several times.

Physical Examination. Poorly developed and nourished child, in some pain but not severe. Skin dry and pale. Hair—Matted and unkempt; scalp dirty. Eyes—Pupils react to light and distance. Nose and Ears—Negative to external examination. Mucous Membranes—Pale. Mouth—Teeth poor, upper incisors broken and carious. Pyorrhea present. Tongue—Heavily coated, protruded in midline without tremor. Throat and Tonsils—Negative. Neck—Small glands in both sides of neck; thyroid not enlarged. Chest—Long and narrow type; expansion equal; breasts undeveloped. Heart—Normal in size and position, no murmurs or thrills, sounds rapid, regular and of good quality. Abdomen—Considerably distended, tympanitic throughout, marked tenderness and spasm in left upper quadrant. There is a questionable but indistinct mass in the left upper quadrant. Otherwise negative. Genitalia and extremities negative. Reflexes negative. Temperature 101, pulse 116, respirations 30. Blood pressure 120/70. White blood count 23,600. Red count 2,764,000. Urine—Normal, cloudy, acid, 1.030, albumen negative, sugar negative. Sediment negative except for large number of epithelial cells. X-ray shows immobility of left diaphragm with respiration.

Immediate operation seemed advisable and the pre-operative diagnoses considered were first, an intussusception, this being based largely on the questionable mass felt. Second, acute appendicitis with the appendix on the left side. Third, a perforation of the stomach from a mass of hair in the stomach, but although this possibility was discussed it was not considered very seriously.

Operation. A high left rectus incision was made and on opening the abdomen a little pale fluid escaped. The anterior wall of the stomach was adherent to the abdominal wall high up. On breaking through the adhesions there escaped a little thick cloudy fluid from which a culture was taken. In this adherent area the stomach was covered with a fibrinous clot which was easily wiped away from the stomach. A large, hard mass, which was somewhat movable, was felt inside the stomach. An incision three inches long was made into the stomach transversely and a hair-ball, about the size and shape of the inside of the stomach, was removed. The opening into the stomach was closed in the usual way. A small miller wick was placed to where the fibrinous clot had been and the abdominal incision closed. The culture showed no growth.

The patient made an uneventful recovery following operation, except for otitis media which she developed twelve days later. She left the hospital 20 days after operation.

Book Review.

The Sympathetic Nervous System in Disease. By W. Langdon Brown, M.A., M.D., F.R.C.P. London: Henry Frowde, Hodder and Stoughton, Ltd. 1920.

In response to the interest displayed in the Croonian Lectures delivered before the Royal College of Physicians of London in 1918, the author of *The Sympathetic Nervous System in Disease* has expanded and re-arranged that material in this volume. The book does not contain a detailed account of the anatomy of the autonomic or vegetative nervous system, nor does it describe in detail the reaction of the autonomic system to disease; rather has the attempt been made to emphasize the main plan of the autonomic nervous system and to illustrate its relations to such a few large groups of disease as affections of the endocrine glands, of the digestive and circulatory systems, and glycosuria. The author presents a careful consideration of the close interaction of the endocrine glands with the sympathetic nervous system and with the reproductive organs, explaining the relation of these functions to emotional response of the nervous system and to the influence of emotion on structure. Brief reference is made to such questions as the relations between psychic conflicts, shocks, and strains to the automatic level of the nervous system. The text includes physiological and clinical data helpful in drawing conclusions on this subject. The book is illustrated by plates and diagrams, and contributes valuable information to the subject of the unconscious mind.

The next annual meeting of the Massachusetts Medical Society will be held in Boston, Tuesday, May 31, and Wednesday, June 1, 1921.

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Boston Medical and Surgical Journal

126 Massachusetts Ave., Cor. Boylston St., Boston 17, Massachusetts

THE RESPONSIBILITY OF PHYSICIANS IN REPORTING NOTIFIABLE DISEASES

The importance to the public and to the profession of reporting notifiable diseases seems to be unappreciated by a great many physicians and surgeons. An article published in a recent Public Health Report has called attention to the negligence of the profession in this regard and has discussed the reasons why reports should be made. It is fair to say that no disease has been placed on the notifiable list arbitrarily or by chance, but each one has been added for some definite reason. The efficiency of public health work is determined to a considerable extent by the completeness of the information contained in reports and statistics pertaining to preventable diseases. A knowledge of the prevailing diseases, of the number of cases, of the rapidity of spread and of conditions favoring their spread is the basis of public health work, and is of inestimable value not only to the immediate community but often to districts at a considerable distance from the source of infection. Where there is no local health department, State officials not infrequently are called to assist in the control of outbreaks of disease of which no cases have been reported—a lack of coöperation which results in a considerable delay in applying preventive measures; furthermore, the reporting of diseases from communities in which there is no local health department gives tangible evidence of the need of one. The reporting of certain diseases is particularly neglected for various reasons; influenza, for instance, is often ignored on the ground that health authorities can do nothing about it; German measles, because of its mildness and supposed harmlessness; and venereal diseases, because they are, by some, considered to be private matters. It is not to any health officer, director, or health department employee that the physician is primarily responsible in the reporting of disease, but to that great principle for which every board of health stands—The Prevention of Disease.

SPECIAL EDUCATION IN OTO-LARYNGOLOGY.

In order to raise the standard of specialization in ear, nose and throat diseases, there has been formed a committee representing the American Medical Association and other societies connected with this branch of medicine, to recommend the curriculum which should be regarded as the minimum of preparation for those who seek to become specialists in oto-laryngology. The lack of adequate education on the part of those who claim to be specialists in this subject has been disclosed by the experiences of the office of Surgeon-General in attempting to secure for the American Army a service in oto-laryngology which should equal that of the other sub-departments of medicine.

The committee has emphasized in the first place the importance of a thorough knowledge of general medicine on the part of those who undertake to make skilful diagnoses and treat patients suffering with affections of the ear, nose, or throat; this knowledge can be acquired either by practising as a licensed practitioner for four years or by serving as an interne in a Class A general hospital, for at least one year. Possessing this qualification, the candidate should then prepare himself further by pursuing the following course in the post-graduate department of a university: anatomy of the head, neck and chest, embryology and histology, one hundred credit hours; pathology and bacteriology, one hundred credit hours; operative work upon the cadaver, one hundred credit hours; physics, thirty-two credit hours; physiology, thirty credit hours; neurology, twenty credit hours; hygiene and public health, ten credit hours; reading of radiographic plates, knowledge of the teeth, mouth, and their diseases; and general surgical technique. These subjects, with the exception of the last, should be considered from the point of their bearing on oto-laryngology. Such a course requires four to five hours daily for a period of six to nine months, and the candidate is advised to spend the remaining portion of each day in attendance upon an out-patient clinic in oto-laryngology.

Upon the completion of the above course, it is recommended by a committee that the candidate should serve, for a period not less than sixteen months, as interne in a hospital especially devoted to diseases of the ear, nose, and throat, or in a general hospital possessing an adequate oto-laryngological service. This course should be recognized as a minimum preparation for the practice of oto-laryngology; in order to rank among the leading specialists, further study of the subject either on this continent or abroad is necessary.

The committee hopes to be able to assist in the following ways those who may be desirous of becoming specialists in oto-laryngology: by securing from the post-graduate departments of the universities a suitable degree, to be conferred only upon such candidates as have followed the above course; by correspondence with the post-graduate departments of the universities, with a view to securing a uniformity in the course of study to be pursued; by arranging with hospitals to limit their appointments, as internes, to those candidates possessing adequate qualification; by preparing a list of hospitals to which candidates may safely be recommended to apply for the position of interne; and by securing reliable information as to the facilities offered by various centres, which they may place at the disposal of those who desire to perfect themselves still further in any department in oto-laryngology, after the above course has been concluded. The profession is urged by the committee to give earnest consideration to this matter.

MEDICAL NOTES.

J. DEJERINE FOUNDATION.—The pathologico-anatomic collecton of Dr. Dejerne and a fund yielding one hundred thousand francs annually, the gift of Mme. Auguste Klumpke, widow of Professor Dejerine, has been accepted by the dean of the medical faculty of the University of Paris. There will be established a museum of neurology, including a laboratory, which will bear the name of the J. Dejerine Foundation.

GIFT OF THE ROCKEFELLER FOUNDATION TO FRANCE.—An anti-tuberculosis organization which has been developed by the Rockefeller Foundation in the Department Eure-et-Loire at a cost of four million francs has been given into the complete control of France. There are included in the organization twenty-four dispensaries, four complete isolation services, a departmental sanitorium and a modern departmental laboratory. This system will be used as a model by the other departments of France. The Rockefeller Foundation is assisting the French people in their campaign against tuberculosis in thirty-eight of the eighty-seven departments and probably will continue its assistance for the next fifteen months or two years. The Foundation has also started among the children of the Eure-et-Loire Department an organization known as the Modern Health Crusaders, a system of child education which has for its object the prevention of tuberculosis by the thorough teaching of hygiene.

AWARD OF MEDAL TO SIR ALMROTH WRIGHT.—The first award of a gold medal established through the gift of an anonymous fellow of the Royal Society of Medicine and open to medical practitioners throughout the world, has been made to Sir Almroth Wright.

AWARD OF THE BISSET HAWKINS MEMORIAL MEDAL.—The triennial Bisset Hawkins memorial medal for distinction in public health has been awarded to Dr. W. H. Hamer, medical officer of health to the London County Council.

BOSTON AND MASSACHUSETTS.

DR. S. BURT WOLBACH'S WORK ON ROCKY MOUNTAIN SPOTTED FEVER.—The valuable work which has been published recently by Dr. S. Burt Wolbach on Rocky Mountain Spotted Fever has been deservedly noted in a recent issue of *The British Medical Journal.* After first summarizing the subject briefly, the article mentions that Dr. Wolbash has brought forward evidence that the parasite responsible for the disease has three definite morphological types: the initial form in infected ticks is a relatively large extranuclear, delicately staining rod without chromatoid granules; the next is an exceedingly small rod with chromatoid granules, and is seen in nuclei in sections of ticks, and rarely in the smooth muscle cells of blood vessels in mammals; and the final one is a relatively large lanceolate paired form, apparently rich in chromatoid granules—this is the form transmitted in the tick to mammals, and is that found in their blood and lesions; it is probably a resting or slightly more resisting stage. Dr. Wolbach's monograph describes also the clinical course of the disease in man and some other aspects of his research, such as experiments to prove the specificity of the parasite, investigation of its properties, and the features of the infection in experimental animals.

Week's Death Rate for Boston.—During the week ending December 11, 1920, the number of deaths reported was 197 against 220 last year, with a rate of 13.17 against 14.41 last year. There were 28 deaths under one year of age against 31 last year.

The number of cases of principal reportable diseases were: Diphtheria, 64; whooping cough, 20, scarlet fever, 31; typhoid fever, 4; measles, 26; tuberculosis, 43.

Included in the above were the following cases of non-residents: Diphtheria, 6; scarlet fever, 5; typhoid fever, 2; tuberculosis, 7.

Total deaths from these diseases were: Diphtheria, 5; whooping cough, 2; scarlet fever, 2; tuberculosis, 11.

Included in the above were the following non-residents: Scarlet fever, 1; tuberculosis, 3.

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THE NORFOLK DISTRICT MEDICAL SOCIETY.

A regular meeting of the Society will be held at Masonic Temple, 171 Warren Street, Roxbury, Tuesday, December 28, at 8.15 P.M. Telephone Roxbury 56089.

PROGRAM.

The Neurotic Patient and Her Point of View.
Miner H. A. Evans, M.D.
Types of Feeblemindedness in Children.
Joseph I. Grover, M.D.
Bradford Kent, M.D., *Secretary.*

Correspondence.

IN RE: SURGERY VERSUS CANCER.

Rochester, N. Y., 17 November, 1920.

Mr. Editor:—

Much has been made of the drop in the cancer death rate in the United States in the year 1918. The drop represents nearly two per 100,000 living population as compared with the cancer death rate of 1917 (1917 rate, 81.6; 1918 rate, 79.8). Enthusiasts pointed out that at last we are beginning to see the fruits of our efforts to induce the public to bring their cancers early to the surgeon for removal. "Early operation cures cancer" is, and for years has been, the burden of our public educational program concerning cancer. Stimulated by the showing of 1918, our efforts have been more strenuous than ever during the past two years.

In the Boston Medical and Surgical Journal of March 13, 1919, appeared an article designed to show that removal of cancers and of precancerous lesions, *per se*, is futile so far as curing cancer and lessening the death rate from cancer are concerned. The points made in that article have never been refuted, so far as I know, unless the cancer death rate for 1918 be considered a refutation; and a refutation seems to be demanded if we are to persist in attacking cancer by our present method.

But how about those 1918 figures? Alas! What short memories have the optimistic cut-'em-out-early advocates! Neither does one swallow make a summer nor does a single year's drop in the cancer death rate herald the beginning of cancer control. It ought not to be necessary, though it seems to be, to allude to the fact that now and then there is a temporary drop in the cancer death rate in some part of the civilized world, but that on the whole and over a period of years, the rate is gradually rising everywhere in the civilized world. In this country the rate in 1910 was 76.2 and in 1911 it was 74.3 (all figures in this article are for the Registration Area of the United States). Again, in 1905, the rate was 71.4 and in 1906 it was 69.1—in each case a greater drop than that of 1918. But please observe the general trend shown in the following table:

Cancer Death Rate per 100,000 Population.

1900	62.9
1901	64.3
1902	65.1
1903	68.3
1904	70.2
1905	71.4
1906	69.1
1907	70.9
1908	71.5
1909	73.8
1910	76.2
1911	74.3
1912	77.0
1913	78.9
1914	79.4
1915	81.1
1916	81.8
1917	81.6
1918	79.8

And now the figures for 1919 are published—80.5! "'Tis true 'tis pity, and pity 'tis 'tis true." Can it be possible that surgery earlier and oftener had nothing to do with the reduction in the cancer death rate in 1918? Obviously surgery neither claims nor can claim at the present time any credit for the similar and greater reductions noted in 1906 and in 1911. Records from Johns Hopkins, Boston, and elsewhere show that we delivered our cancer patients to the surgeons earlier in 1918 than we did in former years, yet in 1900 the cancer death rate was 62.9 and in 1919 it was 80.5—the cancer death rate increases faster probably than the surgical treatment of cancer increases and right along with the increase in surgical treatment. Not that the increased surgery causes the increased cancer death rate, but the fact remains that surgery has proven itself impotent to check the steadily increasing cancer death rate. The surgical treatment of cancer is based upon the assumption, obstinately held to in face of abundant proof to the contrary, that cancer in its beginnings, at least, is a purely local disease. If cancer is not a local disease, then treatment based upon the assumption that it is a local disease is necessarily impotent. In any case, our present treatment is a demonstrated failure. If there is any doubt upon this point the following bit of evidence, novel so far as I know, may be added to the already overwhelming mass of evidence showing the failure of our present methods in the treatment and prevention of cancer.

Cancer is one of a very suggestive group of diseases which among civilized peoples, and among civilized peoples alone, have a very high and a steadily increasing death rate—a death rate which may be always very closely forecast and which varies little from year to year, the variation usually being a slight increase. All this is curiously shown in the following table. The novel feature is the inclusion in the table of the percentage of total deaths caused by cancer.

	1914	1915	1916	1917	1918	1919
Total death rate per 100,000 population	1360.0	1330.0	1400.0	1420.0	1800.0	1200.0
Cancer death rate per 100,000 population	79.4	81.1	81.8	81.6	79.8	80.5
Percentage (of total deaths from all causes) of the cancer deaths	5.8	6.0	5.8	5.7	4.4	6.3

The curious thing to be noticed is that invariably the percentage of deaths due to cancer rises when the general death rate falls, and falls when the general death rate rises, and almost in mathematical proportion to the rise and fall of the general death rate in each case. The explanation is simple: besides being always high and gradually increasing, the cancer death rate never fluctuates very much from one year to the next. Other diseases may or may not have a very large mortality now and then and may vary within wide limits in incidence from year to year, thus affecting the general death rate more or less, but the cancer death rate may always be relied upon to furnish a large number of deaths each year, which number may always be closely foretold. For example, the general death rate for 1918 was tremendously high owing to the severe epidemic of influenza in that year but the cancer death rate remained at about the usual figure, so that the percentage of deaths from all causes furnished by cancer was unusually low. On the other hand, the general death rate for 1919 was the lowest on record, but cancer ran true to form and furnished its usual quota, thereby making its percentage figure the highest on record. What has just been said about cancer applies, likewise, to the other members of the suggestive little group of diseases referred to already but that matter cannot be considered in this article.

I suggest, not with malice toward the surgeons, an explanation of the 1918 drop in the cancer death rate. There must, of course, be some explanation if the activity of the surgeons in treating cancer by removing cancers is ruled out. May it not be possible that a considerable number of individuals who otherwise would have died from cancer in 1918 died from influenza first (the writer has considerable Irish blood) and were so reported on the death certificates? There were nearly 500,000 deaths in 1918 from influenza and pneumonia, and among these 500,000 there may have been some cancer patients. This explanation, at least, has more merit than some others.

The usual objection offered to an article of this kind is: "What good or useful purpose can destructive criticism serve unless something better than the thing criticised is also presented?" More specifically: Why criticize our present method of attacking cancer, particularly when that method is everywhere accepted by medical authority as the one logical method offering any hope for the eventual control of cancer?

It is precisely because the method is authoritatively accepted and universally taught that I criticise it without offering anything to take the place of the thing criticised, even though I could. It is hopeless to attempt to induce honest authority even to consider any plan other than its own when it believes its own plan to be not only correct but the only possible correct plan. Before it will change its opinion, honest authority must be convinced that its opinion is wrong. If and when, it is so convinced, honest authority will immediately abandon its untenable position whether or not there is in sight another position which is tenable. If not convinced, honest authority will obstinately and rightly hold to its opinion and will rightly ignore any other. The first thing to be done, then, is to convince authority that it is in the wrong and thus clear the field for the growth of right. Whether the truth be ready at hand or not, as to the nature of cancer and its correct point of attack, medical authority will cease advocating as the sole possible preventive and cure of cancer the early and complete removal of precancerous lesions and of cancers the moment it is convinced that such removal *per se*, is a proven failure, not here and there, but always and everywhere. Because the truth is not evident is no excuse at all for holding to and advocating a proven untruth.

I respectfully urge anyone interested to study the article spoken of (BOSTON MEDICAL AND SURGICAL JOURNAL, March 13, 1919). I also urge a serious pondering of a great and solemn referendum as to the efficacy of our present method of controlling cancer, to wit: cancer death rate 1900, 62.9; 1919, 80.5.

S. W. LITTLE.

The Boston Medical and Surgical Journal

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The Massachusetts Medical Society.

PAPERS READ BEFORE THE ANNUAL MEETING OF THE SOCIETY, JUNE 9, 1920.

PREVENTIVE MEDICINE IN ITS RELATION TO SCHOOLS.

BY FRANK SPOONER CHURCHILL, M.D., MILTON, MASS.,
Medical Director, Public Schools, Milton, Mass.

THE keynote of this session of the Massachusetts Medical Society is "Prevention," and the old adage, "An ounce of prevention is worth a pound of cure," might well be taken as the text of our morning discussion. It reflects the trend of the times: Conservation and Prevention in all phases of modern life. In our own special field, of medicine, this trend is wide in its scope and seeks to protect the human individual practically throughout his life cycle: from the earliest possible time after conception continuously throughout the active part of his adult life. The trend is manifested by three active movements: Infant Welfare, Medical Inspection of Schools, Industrial Medicine. The first two are devoted to the care of infants and children—"Preventive Pediatrics"; the third concerns itself with adults.

Infant Welfare seeks to promote the health and development of the new individual by care of the pregnant mother during her pregnancy, labor, and confinement, by the care of the infant after birth up to two years of age, and recently by the more forward-looking organizations up to the fifth or sixth year.

Medical Inspection of Schools seeks the welfare of children by protection against contagious disease, by the promotion of good health and proper development.

Finally, Industrial Medicine seeks to protect men and women engaged in the manifold activities of our modern complex and intensive life by study of their bodies, fitting the individual to the job, and by the establishment of hygienic surroundings conducive to health and consequently to greater efficiency.

Thus modern medicine is seeking through these three comprehensive movements to promote the health and happiness of the human race, both as individuals and as communities. In all the movements the keynote is Prevention. This paper deals with the second movement, Medical Inspection of Schools, conceived of as a measure of preventive medicine.

Medical Inspection of Schools is of a two-fold nature: contagious and developmental. The movement started with the first as its objective and was an attempt on the part of the community to protect itself against contagious disease by exercising medical supervision of public schools, rightly recognized as the chief disseminators of such disease. It is thus communal rather than individual in its nature. Out of this first or contagious side of the subject grew the second or developmental part of the work. The latter is an attempt to promote the proper growth and development of the individual child during his school life by constant study and investigation of his body, and by the education of the child himself in the care of that body. It is individual rather than communal in its nature. The contagious side of school inspection is now thoroughly understood, is firmly established and has the hearty coöperation of home, school and government. The developmental side of the question, however, is not so well understood, nor is its importance generally appreciated by either home, school, the medical profession at large, or town and city governments. It is the purpose of this paper to discuss only the developmental side of school medical inspection, touching briefly upon its necessity and outlining a plan for its application.

The necessity for a more widespread and thorough medical inspection of schools is well known to those familiar with the physical condition of the young of our country. Exact knowledge as to this condition of the 22,000,000 schoolchildren of America is not available inasmuch as no comprehensive survey of large numbers of these children has ever been made; but that there is something radically wrong with far too large a proportion of them is now being realized, due, partly to the teachings of pediatricians and other workers in child-life, partly to the reports of the draft examinations in the war.

The pediatrician has known for years of the existence of large numbers of mal-nourished and under-nourished children whom he has encountered daily in hospital, dispensary, and even private practice. Recently he has had the opportunity of learning the "end-results" in some of these unfortunate children—an opportunity furnished by personal experience in the army and by draft reports already mentioned. Experience in the Medical Corps of the Army produced upon the mind of the pediatrician certain vivid impressions; perhaps the most striking of these was the acute sense of "too late," as he observed certain phenomena: in his own wards numerous troops with poor general development and marked physical defects; in the surgical wards, the reparative work of his surgical confreres; in the camp-at-large, the drilling in corrective exercises and gymnastics by "developmental" battalions. He recognized in these cases of mal-development, in these physical defects, the "end-results," the sequelae, of conditions remediable in early life. Then came the reports on the draft board examinations showing 35% or 40% of rejections on account of conditions which again he knew were present and remediable in early childhood. The constantly recurring thought was, "Too late. How did these thousands of youth arrive at this comparatively late age in such a physical condition? How prevent this in the future?" The answer was simple and obvious: Discover and correct these conditions in early childhood, or even in infancy. But how reach those millions in order to make any impression on the child-population at large? Again the answer was obvious: By organized effort, acting through agencies already at work on the problems of child-life, *viz.*, infant welfare, medical inspection of the schools. By the extension and more intensive application of these two movements to constantly widening fields throughout the country, it was conceivable that large masses of infants and children could be reached and studied, defects removed, proper development promoted; resulting ultimately in a more healthy and vigorous American stock to fight the battles of adult life, whether of war or more happily of peace.

We are concerned here only with the elaboration of a plan for the care of school-children. Such a plan must be broad and comprehensive in its scope, must be based on certain general principles. Its object being the care of the child's body throughout school life, it must provide, first for the study, and second for the development, of that body. It may provide for study of the body by repeated physical examinations; it may promote development by training the child in proper care of the body and by coördinating home and school influences. The plan thus involves physical examination, education, and organization.

1. Physical Examination: This examination seeks knowledge of the child's body, both generally and locally; generally, in regard to the nutrition as a whole, as manifested chiefly by weight and height; locally, with special reference to the condition of certain anatomical parts of the body, *viz.*, the eyes, ears, nose,

throat, teeth, glands, chest (external), heart, lungs, spine, and feet. It should be made upon all pupils at least once a year. In addition to this general examination of the school population as a whole, two groups of pupils need special investigation, *viz.*, the athletes, and the backward or defective children: the athletes to guard against over-exertion in the more violent sports, such as football, basket-ball, rowing and track; the backward children, to determine causes, if possible, and to classify.

The examination having been completed, abnormalities or defects, if present, should be reported to the parents, with the advice to consult the family physician for treatment and management. Two such reports are to be made: one, written, by the school physician; another, oral, by the school nurse in her "follow-up" work. Finally, the results of these examinations and reports should be recorded carefully, the records passed on from grade to grade with the rest of the pupil's school history, due weight being given to this particular part of his record as a whole in the matter of class-work, promotions, participation in sports and other school activities. The record for the complete school course, from kindergarten through high school, may be kept on one card and should cover the physical condition of the pupil from beginning to end.

2. Education: "Knowledge is Power." The education, taking the term in a broad sense, is necessary for both children and parents. With the child, it should consist of daily instruction in physiology, general hygiene, or certain principles of right living; with the parents it may consist of conferences, general and special: general conferences with groups of parents, such as Parent-Teachers' Associations, at which are discussed the general principles of school medical inspection, its aims and object; at which also, helpful criticisms and suggestions may be made. Special conferences over the individual child should be held, a "consultation" of home and school; the home being represented by the parents and family physician; the school by the principal, grade teacher, school nurse and school physician. (I have known personally excellent results follow such consultations.)

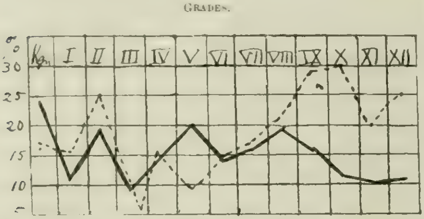
3. Organization: It is obvious that if the plan thus briefly outlined is to be carried out successfully, careful thought must be given to the arrangement of details. The general supervision of the work should be in the hands of a physician, preferably a pediatrician, as "medical director" or "school physician." The work is done partly within, partly without the school: "Intra-School" and "Extra-School."

"Intra-School": The medical director must provide for the examination of the pupils and the keeping of the records. He should also take cognizance of matters touching closely the health of the pupils during school hours: the heating, lighting, ventilation of school buildings; the sanitary arrangements, the school lunches and playground activities; and in the capacity of consultant may render valuable help to the grade teachers, the teachers of physical training, of domestic science and to the dietitian, in their respective spheres.

"Extra-School": Here the medical director will find the success of his department dependent upon the spirit and attitude of the home, and his work greatly facilitated by the coöperation of certain community organizations.

The Home: It is of course vital to have the hearty and sympathetic help of the parents; they are and should be the final authority in deciding what shall be done to the bodies of their children, and in arriving at such decision they may be urged by the school to seek the advice of their family physician. The success of this part of the work depends largely upon the tact and general character of the school nurse and the way in which she does her "follow-up" work.

Community Organizations: The second "extra-school" agency which the medical director may use to attain results is the group of community associations now existent in all American cities and towns, associations moved by a civic conscience, with a desire to render social service to their fellows. They were in existence, of course, before the war, but their number was greatly increased and their civic spirit quickened by the war, and there is now happily a marked desire on the part of many of them still to "carry on" and to apply their energies to the problems of peace and reconstruction. The director of school medical inspection will find in these community organizations invaluable help in the discharge of his responsible duties. "Intra-School" they will supply "volunteer workers" who will assist him in the manifold details of the examinations; "extra-school" they will supply transportation for nurse and pupils: for the nurse in her house-to-house visiting: for pupils who must attend special clinics: eye, throat, dental, orthopedic or nutrition.



Curves showing grade by grade the percentage of boys (black line) and girls (dotted line) who are 10% or more below the average weight for their age and height.

The general principles of procedure thus briefly outlined have been carried out by me recently as medical director of schools in a suburban town. We have just completed our first year. The results have not been analyzed, hence a comprehensive report cannot be given at this time. It is possible, however, to give a brief summary as to the nutritional condition of the pupils studied. The total number examined is 1552; of these, 618, or 39%, are below the average weight of American children of corresponding age and height;* in most of these children the degree of nutrition is not severe; but in 262, or 16%, of them there is a marked condition of under- or mal-nutrition, 10% or more below the average weight. This latter group has been classified according to age and grade, the percentage or proportion to the whole grade calculated, and curves plotted on these percentages, separately for boys and girls (Chart 1). According to this chart, 17% of the girls and 24% of the boys enter the kindergarten to begin their school career handicapped by a considerable degree of mal-nutrition, at least 10% in weight below their average mates of the same age and height. From the kindergarten to the eighth grade, 10% to 20% of the children continue in this same group. The curves of boys and girls run fairly parallel up to the eighth grade. In this grade, at an average age of 14.1 years, the pupils enter the high school, and we note a sharp divergence in the curves of boys and girls: a marked drop in that of the boys; a considerable rise, to 30%, in that of the girls. The total number of both boys and girls examined, however, is small; furthermore, there has not been opportunity to inquire into causes; personal, social, or economic; consequently, no conclusions are justified. The figures are given merely as a matter of record.

The whole group of severely under-nourished children throughout the school system should receive intensive study, and plans for such study are now being formulated.

Dr. Thomas D. Hood of Columbia University informs me (personal communication) that the percentage of mal-nutrition given above do not differ much "from those which are found in other communities of good social standing." Such words from such an authority indicate a rather widespread state of mal-nutrition among our American school children, 22,000,000 in number. It requires but little effort of the imagination to see the connection between such percentages at these tender ages and those of the draft rejections. What are we going to do about it?

PREVENTIVE MEDICINE AND HYGIENE IN RELATION TO COLLEGES.

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THE student population of a college or university represents a somewhat unique problem in regard to preventive medicine and hygiene. This population has somewhat unusual features. The students live largely in college dormitories. They eat in special boarding places. In their ordinary activities of work and recreation they are associated almost exclusively with fellow students. There are, to be sure, contacts with the outside world, but speaking largely, these contacts are occasional. We can regard the problem of preventive medicine and hygiene in colleges and universities as the problem of a very specialized community and, furthermore, of a community with a specialized industry. Looked at from that point of view the college community will have its own community problems and its own industrial problems. Probably all colleges and universities will present variations so they cannot be accurately contrasted with each other, although a comparison between colleges or between a college and another community or another industry will furnish data of considerable interest.

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* The standard of comparison is the Height and Weight Table for Boys and Girls, issued by the Child Health Organization of New York.

It is necessary at first to obtain certain statistical evidence from available data concerning college health, or rather college disease. Mortality statistics furnish the most positive as well as the most tragic data concerning the problems of disease and health. The mortality statistics in the undergraduate department of Harvard University for the period of the last ten years is as follows: On the basis of an approximate estimation of a college population for the ten years of 22,579, thirty-four deaths give a specific death rate per 1,000 of 1.8. As far as possible the deaths are recorded for an entire calendar year of any student registering at the beginning of the academic year. But for the basis of comparison, it is perhaps fair to estimate these deaths on a basis of an eight-months' year, which would give for a twelve-months' year a specific death rate of 2.7 per thousand. If we take the age group of fifteen to twenty-four, inclusive, in the city of Cambridge in a normal year, as 1914, we find that the estimated population in that age group is 20,400, the number of deaths is 76, and the specific death rate per 1,000 is 3.6, a figure considerably higher than that of the University students. There will of course come to the mind of everyone reasons why such a comparison is somewhat unfair.

It might be urged that the army statistics in peace times ought to offer a better basis of comparison with Harvard undergraduates. As is well known, the army does not accept men except those in good health. In 1915, the specific death rate in the army was 4.4, obviously greater than the University rates. This mortality of 4.4 divides itself into two sub-divisions, namely 2.5 who died from disease and 1.9 who died from results of injuries. On the same basis the Harvard death rates show 1.1 who died from disease and 1.7 who died from injury. In other words, there are similar death rates from violence, but the disease death rates are more favorable in Harvard College than in the army. In 1915, the death rate from tuberculosis in the army was .33 per 1,000, while in Harvard University the death rate for ten years was .13 per 1,000. This comparison is interesting because it indicates that the army physical examination for admission does not rule out the cases of tuberculosis in the army. On the other hand, the duration of life in tuberculosis is obviously long. Such cases are kept under treatment in the army and the college student with tuberculosis, provided he lives out one calendar year after registration, will not appear in the college statistics. In the case of pneumonia the army statistics for 1915 show a mortality of .31 per 1,000, while Harvard statistics for ten years show .53 per 1,000. The Harvard statistics are swelled by the inclusion of those cases who died in consequence of the influenza epidemic in 1918-19. The army figures show a much higher mortality rate in organic heart disease, measles, appendicitis, and cerebrospinal meningitis than the Harvard statistics.

The death rate among the undergraduates in Harvard University from the particular diseases is as follows: Pneumonia, .53; accidents, .35; tuberculosis, .13; cancer and malignant tumors, .08; heart disease, always in the form of acute endocarditis, .08; appendicitis, .04; meningitis, .04; mastoid, .04; typhoid, .04, and septicemia, .04. From the point of view of preventive medicine and hygiene, there are certain very interesting deductions that can be drawn. It is rather striking that malignant growths loom up as a cause of considerable mortality even among these young men. As far as we know, malignant disease is not preventable. From an ideal standpoint, the other conditions may be regarded as preventable. The cases of acute endocarditis developed upon chronic endocarditis. The students had chronic endocarditis at the time of entrance to the University, and prevention of this condition is obviously a problem of earlier life. The mortality in the case of meningitis, typhoid fever, mastoid disease, and appendicitis must be attributed to the inevitable mortality in association with those conditions. In ten years, as far as is known, the cases of typhoid fever which have occurred in the University have been contracted outside of the University. Here is an illustration of the effect of outside influences upon the mortality of a given community. In comparison with operations for appendicitis, the mortality from this condition is well under 1%, which may be regarded as fairly satisfactory.

However, the important causes of death are pneumonia and accidents which together comprise over half the deaths. Deaths from violence of one sort or another, including deaths from suicide, certainly loom large in this series. These regrettable deaths seem to be part and parcel of the circumstances of our present life and play an important rôle in mortality in the age group under discussion. In this respect the University statistics are somewhat similar to general statistics. Pneumonia has caused more deaths in the last ten years among Harvard undergraduates than all other causes combined. Our experiences with the influenza epidemics and the attendant pneumonias indicate that we have not at present the ability to prevent pneumonia or to prevent a rather definite mortality from pneumonia when it occurs. In the epidemic of influenza of 1918-19, the actual mortality of the cases of pneumonia was 10%. There were treated at the Stillman Infirmary 258 cases of influenza with 61 cases of bronchial pneumonia and of the 61 cases of bronchial pneumonia six men died. This mortality of 10% is certainly to be favorably contrasted to the usual recorded mortality of 30 to 50 per cent. This discussion of mortality rates among students would seem to show, first, that the actual number of deaths is small and that no single cause of death is conspicuous, and second, that under the University medical care of the sick no unusual disasters have occurred.

In discussing morbidity statistics, one is at once brought face to face with the fact that the commonest cause of illness among students which is sufficient to remove the student from his academic work is the group of upper respiratory diseases which are designated as colds, coryza, grippe, laryngitis, tonsillitis and influenza. During ten years an average of 632 students each year in Harvard College were unable to attend a period of at least two days of their college work on account of these upper respiratory infections. Of course in some instances the same student is counted twice, but approximately one out of every three students loses at least two days of his work on account of upper respiratory infections. Under contagious diseases are included chickenpox, diphtheria, measles, German measles, whooping cough, and scarlet fever. During one year there was a large epidemic of German measles, with no fatality; but with that exception the figures are relatively constant. On the average there are fourteen times as many absences on account of upper respiratory infections as those on account of the so-called contagious or quarantine diseases. In other words, there is an average of 45 cases of the so-called contagious diseases as opposed to 632 of the upper respiratory infections. It is generally believed that both these groups of diseases are transmitted in the same way, and have the same problems of prevention. In comparison with these two groups of diseases, the other causes of morbidity among students are relatively insignificant. There are, to be sure, various intestinal disturbances, and there are the results of accidents, etc., but the droplet infections remain the most important cause of students' absences.

This year we are collecting statistics concerning the amount of time lost by illness. The number of absences in terms of days run from 800 to 1700 per month. The number of days lost by illness this year reached its height in the early part of February, so that the month of February had 1682 student absences. In January, at the beginning of this year's epidemic of influenza, there were 1346 absences. On the basis of a calendar year, for slightly over two thousand students, we find an average loss of time for each student of seven college days per year. There are obvious defects in these figures, because it will be seen that the figures do not include the relatively more healthy summer months, but do include the relatively more unhealthy winter months. Furthermore, it may be argued and with a certain amount of justice that students will relinquish their college duties on a slighter pretext than a man might relinquish a money-paying job. It is to be remembered that this figure includes the total time of convalescence which tends to be longer in the case of students than it would be in an industrial worker. The figure, then, of seven days per student year is certainly liberal. However, it compares very favorably with army statistics and for other industries. When one faces the fact squarely it will be found somewhat difficult to suppose that any great improvement in these figures can reasonably be expected until there is a considerable improvement in the health of the community at large. It indicates very definitely however, that whatever measures are to be taken in order to yield actual results in the decrease of disease must be taken against the whole group of respiratory infections. It must be recognized that the contagious diseases are not as important either in number of students affected or in loss of time as that group of conditions designated as a cold, the grippe, etc.

Preventive medicine, however, is a broader term than the actual prevention of obvious disease. The war brought home to us very forcibly that an individual could be fit for certain industries, but not fit for the industry of war. The physical examination of young American manhood showed that approximately one out of three young men who came before the examining boards was declared unfit for military service. While a goodly proportion of the unfit was disqualified for the so-called organic defects, there was a large group which was disqualified because they did not meet the army requirements of physical fitness from a lack of care of the human body as a machine. For a number of years, we have been carrying out physical examinations at Harvard University. The number of men who are found with well-marked organic defects is surprisingly small. Under 5% have definite valvular disease of the heart, which is our largest group of organic disease. There is of course a considerable number of isolated cases of various defects. But speaking generally the students are organically sound. From the viewpoint of organic disease there is no conspicuous problem of preventive medicine. Our figures show that in less than 1% do we find in our physical examinations diseased tonsils which need to come out, or neglected teeth which need attention, or uncorrected eyes. We attribute this good showing to the effect of health propaganda of the last two decades. The greatest number of defects which we found, can be divided into two great classes: one, defective bodily mechanics, and two, a group of conditions which can best be described as nervous instability. From the point of view of physical examination in the college it would indicate that preventive measures should be directed particularly against bad bodily mechanics and nervous instability.

The frequency of nervous instability cannot be given in actual figures. It is certainly common in a college community as in every other community. This condition may be manifested by rapid heart action, unstable blood pressure, etc., at the time of the examination, or subsequently in the college course by a large variety of nervous ailments, many of which handicap rather than disable. One finds among college students usually, however, in less pronounced form, all the signs and symptoms of adult nervous instability. Likewise one finds the same ineffectiveness despite organic soundness. Since most college students are still plastic, it would seem possible to accomplish real benefit along preventive lines by correcting as far as possible nervous instability in the student population. I can recommend no panacea, but believe that wholesome daily habits will go far toward controlling this condition.

In our examinations of the bodily mechanics we classified not only the standing position but also the mechanical use of the feet. We have been much impressed in the work in college by the considerable number of students who before they leave college have difficulty with their feet or their backs, and of course this impression is substantiated by experience with adults among whom back and foot troubles are certainly common. In our examination we found that approximately 80% of the students may be regarded as having unsatisfactory bodily mechanics, either in regard to their backs or their feet.

Based upon the data already given, a program of preventive medicine and hygiene has been adopted in Harvard College. This program, which is required of the entire freshman class, has been an experiment put into operation for the first time this year. It is of course too early to speak with assurance of its success or failure. A series of some twenty lectures on the general subject of hygiene has been given to the entire freshman class. These lectures have covered what might be called the fundamental principles of general hygiene. The lectures are designed to supplement the physical examination, the advice of the medical office at the University, and the individual conferences with one of the University physicians. In these lectures are discussed such points as bodily mechanics, exercise, rest, food, hereditary influences, ventilation, and the infectious diseases. In the course of the lectures on the infectious disease the venereal diseases are discussed not as a feature but as information which intelligent people should have. In addition to these lectures which students in the freshman class are required to take, a minimum of physical exercise of at least one hour three times a week is required. We aim to give each member of the freshman class the habit of exercise under supervision. The student is quite at liberty to choose his own form of exercise with the exception that he must know how to swim, and if his bodily mechanics are very unsatisfactory he must receive for a short period intensive training in that subject.

Each freshman receives a varying amount of advice at the time of his physical examination. If he presents at that time any defects, he is followed up and may be kept under frequent observation all through this college course.

For the upper classmen there are no set requirements. The upper classmen have all been examined physically, and general supervision is kept over their physical welfare. There is every encouragement made for the indulgence in physical recreation, but there is no requirement made in that regard. For the upper classmen there is an elective course in informational hygiene which is designed to give to the group of college men such information concerning hygiene as men of affairs would seem to require. For the upper classmen also there are the opportunities for conferences on health in addition to the opportunities to obtain medical advice when they are ill.

Like any other community or industry there are, of course, the usual sanitary problems in a university. In Harvard University there is a sanitary inspector who is a member of the staff of the Department of Hygiene. He is usually one of the junior men of the Department of Sanitary Engineering. He is responsible for periodic examination of food, etc., at the college dining halls. Various individuals who handle food are of course subject to medical examination. The Department of Hygiene has supervision of the sick students and in any event is always informed of all cases of illness. Consequently data are constantly available for the adoption of special preventive measures.

From the data here presented, it would seem that the health of the college community must be attacked along lines similar to other communities. There are no particular hazards and no particular diseases inherent in college life. While it cannot be stated in exact figures, yet there is adequate information so that we know the venereal problem at the present time at least is certainly not an important problem in the life of the college community with which I am familiar. It would appear, furthermore, from a study of the data in this paper that the application of preventive medicine must needs be along the lines of what is perhaps best called health habits. Isolation and quarantine, while of course of value in upper respiratory disease and the so-called contagious diseases, do not seem to be particularly fortunate in eliminating those diseases. If we are to reduce the instance of the upper respiratory diseases which cause the large bulk of illness among students, we must secure the adoption of proper health habits on the part of the members of all communities including the student communities.

Furthermore, if we are to increase bodily efficiency, if we are to reduce the number of those unfit for military service below the rather striking figure of approximately 40%, we must persuade the youth of the country to take adequate care of their bodies throughout the year and not merely to be interested in their bodies when they happen to be ill. The intelligent care of the body demands a certain amount of information in regard to it which may well be given in lectures on the general subject of hygiene; and, furthermore, it demands a reasonable amount of physical exercise. I am not pleading for a course in competitive athletics, but merely for an adequate amount of bodily exercise to maintain reasonable body fitness. Good bodily mechanics and exercise are after all only two closely related health habits. An adequate amount of rest, proper food habits, and many others are equally essential.

Moreover, it is only by wholesome health habits that we can expect to diminish the nervous instability of the people at large. It is certainly not my impression that college students are any more nervously unstable than the rest of the world. In fact I am inclined to believe that the contrary is the case. There are correspondingly more suicides in the country at large than in the college population, but the occurrence of suicides in college and the occurrence of the signs of nervous instability should induce us to attempt preventive measures, wherever possible, against this condition.

It would seem that while our standard methods of preventive medicine with which we are all familiar can of course be greatly perfected, nevertheless, not much more is to be expected of them. Already, in consequence of competent medical advice, there is only an occasional inevitable death from such conditions as appendicitis, mastoid, etc. At the present time local sanitary inspection and public health measures largely guarantee the purity of water and milk and tend to eliminate typhoid fever. It is for these reasons that I suggest strongly that more emphasis should be laid upon instruction in hygiene and the systematic endeavor to attempt to establish in the population of all communities adequate health habits.

The General Management of Health in Industry.

By W. Irving Clark, Jr., M.D., Worcester.

In every factory there are two distinct products: that of the machine and that of the worker. Together they are represented by the finished article. Neither can be separated from the other, for the machine which produces the article cannot work without the labor of the man who controls the machine. Thus in production there are two equally important factors at work—the man, and the work of the machine.

The machine has always received due care but up to ten years ago little attention was paid to the physical condition of the worker. The vital importance of the health of the worker is now fully recognized from an economic as well as a humanitarian point of view, and there is hardly a large factory in the country which has not now a well equipped medical department.

The industrial physician must be well trained not only in medicine but factory management, because of the intimate contact between his work and that of the other departments. He must know thoroughly the working conditions in the factory and the types of machine operated, in order to understand the accident and health hazards present.

The responsibility of the industrial physician is similar to that of the army surgeon. Both have the health and welfare of a large number of men under their control, both have problems of preventive as well as curative medicine and surgery constantly before them.

The industrial physician must see that work is carried on in an environment compatible with health. This means that all sanitation is under his control and that he must be familiar with the problems of maintaining adequate ventilation, heat, lighting, and atmospheric conditions. He must know the physical condition of each worker who enters the employ of the company. This is accomplished by a complete but rapid physical examination lasting not more than five minutes. The examination is made of the stripped applicant, and those who show any abnormal condition are set aside for a more complete examination after the rush is over. Unless an examination is made rapidly, men are held too long and the smooth running of the Employment Department interfered with.

He must see that all defective workers are properly placed. It is seldom that it is necessary to reject a worker because of his physical condition. Rejections are made only when a man's physical condition makes his working in the factory a menace to himself, to others or to property.

He must follow up all defective workers and see that they are not suffering from the effects of their work. This is done by a follow-up system calling for the regular reëxamination of defective workers at stated periods.

He must diagnose all cases of sickness in the factory and give advice and simple emergency treatment to those requiring it. The function of the industrial physician is not to treat medical cases. The treatment should always be carried on by the family physician or at a hospital, but he must give simple emergency treatment and a great deal of advice. A most important duty is the instruction of men needing care to go to a doctor outside the factory. He must study the hazardous processes and reëxamine frequently all workers exposed to poisons of industry. He must prevent the spread of contagious disease by early diagnosis, isolation and, when possible, by preventive inoculation. He must diagnose and treat all cases of accident occurring among the workers and endeavor to return the injured to work at the earliest moment, advising the employment manager as to the type of work desirable. This is an effort to duplicate the reeducational work of the army.

The industrial physician must coöperate with all other departments in order that his work may be effective. He must arrange his work so as to interfere as little as possible with production, and must always remember that production is the life of the factory.

If these responsibilities are earnestly met and carried out the effect upon the health of the workers is definite and reflected in better work, increased morale and a definite reduction of time lost from sickness and accident. The medical profession has in industrial medicine an opportunity for research work which does not exist elsewhere. Organized medicine in the hospital sees only advanced pathological conditions, even the general practitioner is not called in until the symptoms of disease have become marked. In the case of the industrial medical department, however, organized medicine with good equipment is provided with large numbers of cases of beginning as well as advanced disease and provides in its dispensary an opportunity to study the earliest types of pathological processes. The fact that in the majority of cases the patient can be summoned by telephone for any examination desired at five minutes' notice, and that cases can be followed for years offers an exceptional opportunity for study.

Unfortunately, the industrial physician finds so much of his time taken up by the routine of his work that little has as yet been published; however, work along these lines is going on slowly and we hope eventually many new things may come from this very interesting field.

THE CONTROL OF VENEREAL DISEASES.

BY GEORGE GILBERT SMITH, M.D., F.A.C.S., BOSTON.

MANAGEMENT of the venereal disease problem, complicated though it is by many factors, is nevertheless simple enough in one respect. Contagion is, for all practical purposes, by personal contact. Tuberculosis may be spread through the agency of dust; scarlet fever is often milk-borne; typhoid bacilli may pollute the water supply of a city. The venereal diseases are spread from one individual to another, in the vast majority of cases by the sexual act.

In considering this problem it would seem permissible to ignore the less frequent methods of infection; if infection through sexual contact could be done away with, there would be no fear of contagion by other methods.

Viewing the question as a whole, it would appear that there are two points of attack. One is the prevention of infection of the individual; the other is the cure of the carrier of infection. Either end alone, if it could be consummated, would eradicate venereal disease. Since neither is likely to be achieved, we must, so far as is possible, try for both.

Prevention of Infection. The greatest safeguard against infection is chastity. There is today, so far as I know, no real opposition by medical men to the statement that in the great majority of instances, continence is perfectly compatible with health of body and vigor of mind. This doctrine should be taught widely, especially to boys between the ages of 12 and 21. Early instruction bites deep, and helps to form convictions which will stand against the assaults of later life.

It is futile, however, to act upon the assumption that even a large minority of boys will reach the age of 25 without having had sexual experiences. Only comparatively few will do that. To increase the number of these and to exercise at least a slight check upon the sexual activities of others, constitutes one definite aim. It is an act of justice, no less than one of self-preservation, that society should allow no boy or young man—indeed, no girl—to enter into promiscuous sexual relations without having a clear knowledge of the danger to which he or she is exposed.

Education is, therefore, the foundation of all progress against venereal disease. Its object is to acquaint every young person with the fact that continence is not harmful; that the sexual phase of life should be reserved for one man or one woman; that promiscuous intercourse may be the means of ruining one's health, of unfitting one for marriage, and of infecting those who are dearest to our hearts. Education should begin at least as early as puberty; it should be scientifically, not emotionally, presented, and above all should not contain exaggerations. There is not time to go into the various modes of education in any detail. Sufficient to say that whenever education along these lines is offered, it is always eagerly received. The field for dissemination of knowledge is vast,—boys' clubs, Y. M. C. A.'s, factories, and schools. Often more can be done by teachers and gymnasium instructors, for instance, through personal example and a few well-directed words. The time to strike is in youth; later, when a man's habits are formed, conversion is difficult. If a man who has reached years of discretion chooses to jeopardize his health, his family life and his career by sexual indulgence, it is more or less his own lookout. For immature youth to be allowed to embark upon such perilous adventures while not yet awake to their dangers is a crime.

Prevention at the source, so to speak, is furthered by lessening the opportunities for sexual irregularity. Young people should have every facility for wholesome recreation. It is from this point of view, to my mind, that prohibition really is a good thing. There is no doubt but that drinking, and places where drink was sold, were most potent factors in increasing the number of sexual exposures, and in making careless those who otherwise might have been too fastidious or too cautious to indulge. You have all known such instances. The father of a family, drinking with business associates, carried off his feet while intoxicated; the student, dining and wining "like a man," infected by some cafe habitué; most pitiful of all, the girl who trustfully lowers her inhibitory faculties by drinking with a man whom she does not really know.

Liquor, prostitution, and venereal disease are great allies. The removal of the first two from the path of youth will be of great help in getting him past the third.

Personal Prophylaxis. Opinion is divided as to the place of personal prophylaxis in the fight against venereal disease. Not that anyone doubts the efficacy of venereal prophylaxis when properly administered. The tremendous decrease in venereal disease in the United States Army—the number of non-effectives from this cause decreasing from 23.23 per 1,000 in 1909, when prophylaxis was instituted, to 4.44 per 1,000 in 1916, proves its value. Riggs has shown that if prophylaxis is employed within one hour after exposure, the failures are less than 0.1%; if used during the first four hours, they are less than 1%. Among 100,000 prophylactic treatments administered at Bordeaux, the failures were 1.7%.

Basing their position upon the proved efficacy of personal prophylaxis, the Society for the Prevention of Venereal Disease, which was established in England about one year ago, advocates the wide dissemination of knowledge as to the use of the prophylactic packet, and believes that, inasmuch as man will be sexually promiscuous anyway, the best weapon against disease is prophylaxis. The State of Pennsylvania, according to their Assistant Commissioner of Health, also advocates this measure.

The adaptation of the army prophylaxis station to civil communities does not seem to be feasible. The difficulty of securing competent attendants and the cost of keeping such stations open day and night are two very real objections. In addition to the practical obstacles in the way of establishing prophylactic stations, there are also the more theoretical objections against advocating either of the methods of prophylaxis. The Federal Division of Venereal Diseases and the Massachusetts Board of Health do not mention them in their program; the American Social Hygiene Association has no personal prophylaxis plank in its platform. The Interdepartmental Commission appointed in England to consider the danger of dissemination of disease following demobilization expressed their belief that "The official application of a packet system to the Civil Community is neither desirable nor practical." The Public Health Commission of the London County Council holds that the value of prevention will be offset by the increased number of exposures brought about by the feeling of safety which prophylaxis would engender.

After all, is there not a certain incongruity between advising continence in one paragraph and in the next describing a method of prophylaxis? Prophylaxis, from the individual's point of view, is all right. If he is going to expose himself, let him by all means do what he can to prevent evil consequences. From the point of view of the campaigner against venereal disease, it is all wrong. The open advocacy of prophylaxis takes a good deal of weight from the advice against sexual promiscuity, and suggests to the listener that these teachings are insincere.

The Cure of Carriers. There can be no division of opinion as to the desirability of cleaning up the carriers of venereal disease. Here again the process must ultimately go back to the individual and to his state of mind as regards his infection. If he is satisfied merely with a cessation of the more pronounced symptoms of his malady, no amount of legislation and congressional grants will force him to continue treatment after that point is reached. Education is, therefore, also a requisite here. The youth of the country must be taught the absolute necessity of the thorough treatment of venereal disease, and the danger of its remaining latent, but potentially dangerous. It might not be amiss to include among those who need education along this line, the doctors themselves. I am inclined to think that syphilis, if recognized, is more thoroughly treated than is gonorrhea. A man either treats syphilis or he doesn't treat it; if the former, he cannot have failed to have imbibed, along with the newer methods of treatment, some idea of the proper amount of treatment to give. On the other hand, any practitioner can give a prescription for use in urethritis; if the discharge ceases, well and good, no matter how many gonococci the prostate and vesicles may harbor. There seems to be, with certain doctors, a sort of unwritten law against rectal examination and prostatic massage.

A realization of the seriousness of venereal infection is one thing; the means to cure it is another. There must be facilities for treatment,—not small facilities, grudgingly provided, but facilities so good that their very excellence proves the importance of the end which they serve. One may ask why the sufferers from venereal disease should be treated so well, when other and worthier sick have to get along with less. I say, because Society is seeking a larger end than that of the health or the happiness of the individual. We endeavor to cure the sufferer from venereal disease, not for his own sake alone, but for the sake of all with whom he comes in contact. It does no good to point to excellent clinics run in the morning when nine-tenths of the sick cannot afford to leave their work to attend them. I should like to see the establishment of a free Board of Health Clinic, open in the evening or the late afternoon, with a salaried medical staff. The State would save money in the long run.

I have tried to show that the question of control of venereal disease rests upon, first, the prevention of infection in the individual; second, the cure of those who, in spite of the first provision, do become infected. Let us see what is really being done.

In July, 1918, spurred into action by the needs of the war, Congress created a Division of Venereal Diseases within the Department of Public Health. The same Act created the Interdepartmental Social Hygiene Board, composed of the Surgeons General of the Army, Navy, and Public Health Service. Four million dollars was appropriated for the next two years. Of this, one million dollars was allotted on a per capita basis to those state boards of health which fulfilled the regulations of the Secretary of the Treasury. These regulations included the following points:

1. Syphilis and gonorrhea must be reported.

2. An officer of the Public Health Service shall be assigned to each state receiving the allotment, to coöperate with the state health officer in supervising venereal disease work in the state.

3. The allotment itself shall be expended on standard lines: 10% being assigned to administration, 50% to treatment, and 20% each to repressive and educational measures.

To receive an appropriation for 1919-20, each state had to appropriate a sum equal to that received from the Federal Government.

Thus the campaign is directed from a central bureau in Washington, which coöperates with each state board of health. The State Board of Health is assisted by an officer assigned from the Federal Division of Venereal Disease who serves to keep the two bodies in contact with each other. The State Board of Health works with the medical profession of the state and endeavors to build up their coöperation.

The State Board of Health provides medical centers—there are 16 in Massachusetts—where diagnoses may be made, venereal disease treated, and the local members of the medical profession trained in the management of venereal disease. The doctors are required to report to the Board of Health by number only each case of venereal disease, and to give the State Board the patient's name and address in case he or she fails to follow up the treatment. Information as to the existence of "carriers," such as clandestine prostitutes who are spreading disease, is requested by the State Board.

These are the salient measures. In addition, there are the more diffuse but no less important educational measures. Lectures, exhibits, pamphlets, placards, and films are slowly undermining the fabric of ignorance and false modesty, the erection of which began before the venereal diseases were differentiated. Through education the laity is being taught the practical value of chastity and the seriousness of venereal infections; through education is being taught the need for thorough treatment if infection has occurred.

C. C. Pierce, Assistant Surgeon General of the Public Health Service, in speaking of the obstacles to the campaign against venereal disease, considers the greatest obstacle to be the reluctance of a certain percentage of practicing physicians to participate whole-heartedly in the program for venereal disease control. It seems inconceivable that the very men who see most clearly the ravages of venereal disease should oppose the measures taken to control this plague. "Conservatism" is the answer, no doubt, yet it furnishes no excuse.

A movement, nation-wide, backed by Congress with its power of appropriation, initiated by the Division of Venereal Disease with a determined, yet rational policy, is under way. Results may not appear at once, but, in my belief, some of us may live long enough to see established a practically complete control of venereal disease.

MENTAL HYGIENE.

BY WALTER E. FERNALD, M.D., WAVERLEY, MASS.

MENTAL health is as important to the individual and to society as is physical health, and it is fitting that mental hygiene should have a place in a symposium on general hygiene and on other phases of special hygiene.

The aim and purpose of mental hygiene, as defined by the Massachusetts Society for Mental Hygiene, is to work for the conservation of mental health; to help in raising the standards of care for those suffering from or in danger of developing mental disease; to promote the study of mental disease in its various forms and varieties; and to disseminate knowledge concerning its causes, treatment and prevention.

In other words, mental hygiene means the correlation and application of all available knowledge concerning the causes, prevention, treatment and care of all forms of mental disease and defect.

The vastness of the field for mental hygiene is partially indicated by the existence of the twelve great state hospitals for the insane in Massachusetts, with 15,000 patients under treatment, the majority of these patients representing those whose insanity began when they were young. Over 3,000 new patients are admitted annually. One person in 259 of the inhabitants of the State are patients in these hospitals. The cost of these hospitals for 1919 was over $6,000,000, representing one-half of the State tax, and more than one-fourth of the State expenditures.

Massachusetts also has two schools for the feeble-minded, with 2,500 patients, and hundreds applying for admission. There are over 12,000 persons in the state known to be feeble-minded, with the probability that the actual number is at least twice that number.

There is one hospital for epileptics with 1145 patients. The State is also called upon to support hundreds of inebriates and mentally defective delinquents in its penal and pauper institutions.

The patients in the hospitals named do not include the many cases of mild insanity cared for at home, perhaps masquerading under the friendly diagnosis of nervous prostration or neurasthenia, or coming under the head of the minor psychoses or of the psychoneuroses.

Massachusetts has always been generous in its treatment of the mentally sick, and the writer believes that the present standards of hospital care in this state compare favorably with the best in the world.

It is a striking fact that the average patient who is committed to a state hospital or a school for the feeble-minded has not consulted a physician for his mental malady until the physician is called upon to sign the commitment papers. In other words, the physician is seldom called upon to treat incipient stages of mental diseases, although such diseases are often amenable to treatment before they are fully developed. In fact, the prognosis as to cure is usually in inverse ratio to the duration of the disease.

The reasons for this delay are many and complex. Personal and family pride is largely responsible. Mental disease to many people still connotes personal and family inferiority, perhaps a persistence of the medieval idea of demoniac possession.

A mistaken interpretation of the ideas of heredity as applied to mental disease develops a sort of fatalism and of horror at the appearance of mental trouble, whereas an intelligent understanding of the exact family liability is often sufficient to prevent the dreaded event.

Some forms of mental trouble may be hereditary and other forms are never hereditary. Even with hereditary tendencies as a predisposing cause, a definite exciting cause or causes must usually be added. The vast majority of the ancestors of every individual were normal and sane. Heredity tends more strongly towards health than towards disease. A person with mental trouble in the family may usually escape mental disease by proper surroundings, healthful and temperate activities, and proper mental and physical habits. Indeed, most forms of insanity do not appear suddenly, but develop gradually and might have been seen earlier by close observation.

Certain forms of insanity are probably incurable from the beginning, but nearly one-fourth of the patients admitted to the hospitals are sent home recovered. Many forms of mental disease are due to known and preventable causes. Many of the 15,000 persons now in our hospitals might have remained sane and lived useful and happy lives if they or their friends had known certain facts and acted accordingly.

The art of mental hygiene largely devolves upon the general practitioner—who alone has access to these patients in their pre-psychotic or highly curable period. Even the best of our medical schools pay very little attention to the teaching of psychiatry compared to its importance and the size of the field. The average physician has received very little instruction as to the signs and sypmtoms of the pre-psychotic stage, as shown by minor failure of adjustment and adaptation, a distaste for former work and interests, change of habits and feelings and emotional reactions.

The psychiatrists themselves know far too little of the juvenile and adolescent danger signals of future mental disease. The high school period often shows signs of mental or social distress, which, if recognized and acted upon, would prevent future mental breakdown. And the disciplinary problems of any college include many students who need the physician or the psychiatrist rather than the pedagogue or the disciplinarian or the moralist.

White has aptly said that "childhood is the golden period of mental hygiene," and yet in public and private schools very little application has been made of the science and art of mental hygiene. The child is expected to adjust himself to the work of the school. Little attention is paid to his heredity, his inferior or superior intelligence, or to innate personality traits like emotional instability, egocentric tendencies, feelings of inferiority, special aversions, special disabilities and his keen desire for adequate self-expression. In reviewing the school history of psychotic patients, it is often found that even in school life marked deviations of behavior and emotions and feelings occurred. We shall eventually prevent many cases of potential mental disease by proper recognition and understanding and management of these forerunners of mental instability in the school period. No field in preventive medicine offers a more promising opportunity than this teamwork of the psychologist, the psychiatrist, the teacher and the family physician.

Many juvenile and adolescent problems are caused or intensified by poor parental management. Often too much has been expected in the way of school achievement, social success, in earning capacity, or they have had uncongenial work, too little recreation, limited interests, lack of proper sex knowledge and understanding, etc. These cases often clear up at once when the proper readjustment has been made by taking off the load, perhaps by a new school, different studies, a new job, new interests, a good talk with a trusted physician, and perhaps an entirely new environment.

Untreated, such cases often become permanently warped and disabled, if not actually insane. There is a great need for an authoritative manual on "Mental Hygiene for Parents," comparable with Dr. Richard Smith's book, "Baby's First Two Years." Parenthood *per se* does not always imply inspiration in fitting boys and girls to meet the complex problems of our modern civilization.

The employment and personnel managers of our great industrial interests are keenly alive to the significance of the mental factors in problems of individual and group unrest and turmoil in their organizations. A man with a paranoid personality of wordy type, with capacity for leadership, finds a fertile field in the many unstable and suggestible mentally inferiors to be found in any large group of men. Some such combinations help to explain "mob psychology," as expressed in rioting and violence.

Within a few years the State Department of Mental Diseases has established out-patient clinics in many cities of the State, conducted at regular times by the staffs of the various state hospitals and schools for the feeble-minded. Such clinics are now available all over the state. They are being used freely by many patients who would not go to state hospitals, and many of whom are going through the incipient or most curable stages of mental disease. The Psychopathic Hospital in Boston also receives presumably mental patients for thorough examination and advice, and also conducts a daily out-patient mental clinic. There is an increasing tendency for physicians to refer mental problems to these out-patient clinics. Of course, there is no money charge for the advice given at these clinics.

The last legislature passed laws requiring a mental examination of all school children found three or more years retarded in school performance, and requiring cities or towns having ten or more mentally defective children to give these retarded pupils suitable training and education in special school classes.

This is a flank movement for the benefit of the feeble-minded of the state. In a few years all such people will be recognized, for all children come under the control of school authorities between the ages of 6 and 14. This will eventually mean that every feeble-minded child may receive proper education, habit training and industrial training during the formative period of youth. The idiots and imbeciles not cared for at home, and the highly potential hereditary defectives with sex tendencies, and those with criminal tendencies, will gradually be drafted into the institutions. We know now that some mental defectives are inherently bad and vicious, and that others are tractable and may be made industrious and harmless. We no longer believe that all mentally defective persons need to be permanently confined in an institution.

The army tests revealed thousands of technically mentally defective drafted men whose mental defect had not prevented self-support and practically blameless lives. Much of the rough and disagreeable manual labor of the mines and fields and forests is performed by persons who could not pass the modern intelligence tests. The lack of 100% efficiency alone does not call for institutional care, or for the taking away of the "right to liberty and the pursuit of happiness."

Original Articles.

A CASE OF MULTIPLE SCLEROSIS*.

By Florence L. Meredith, M.D., New York.

The following case has been under observation, although not directly under the writer's care, for nine years. The main portion of this history was written four years after the onset, and the appendix today:

Male, 43 years old, lawyer. Family history: Father died at the age of 60 of chronic nephritis. Mother living and well, now 75. One brother living and well, although he had neurasthenia five years ago. Patient is married and has two children, one perfectly normal, the other of highly nervous temperament, having been obliged to miss a whole year out of school at the age of 16 on this account. There is no history in the family of any organic nervous diseases, tuberculosis, syphilis, or cancer. Neither were there any mental troubles. Patient's mother is said to be almost pathologically awkward in gait and all motions.

Past History: Patient had most of the children's diseases, but was otherwise considered well. Never had convulsions. Was of athletic type in school days. Had a peculiar habit of lying down flat on his back on the floor instead of sitting in a chair, whenever opportunity offered, all through his youth. The first neurological symptom appeared at the age of 19, when he had a unilateral strabismus of sudden onset, lasting a few months and disappearing as quickly as it came. He was always a heavy smoker, consuming sometimes a dozen strong cigars a day. Very moderate use of alcohol, tea, and coffee. At the age of 20, had a severe attack of malaria. No history of venereal disease or even exposure. At the age of 33 had serious business trouble, causing much worry and anxiety for several years after. At the age of 35 had a fall backward on the ice. Hit on the back of his head and was unconscious for about an hour. No results were observed and recovery was apparently complete in a few days. The following winter he had an exactly similar fall with unconsciousness for a shorter period, and prompt recovery.

Present Illness: Four years ago patient first noticed that his legs were getting weak, especially the left. No pain. Family also noticed that his speech was slow and exact. This gave the impression of increased dignity, which, however, was in contrast to sudden bursts of almost uncontrollable laughter at slight provocation. At the same time he began to walk unsteadily. None of these symptoms were sufficiently marked to be noticed by anyone except his family. He frequently said jokingly that he was a sick man, but no one took him seriously at that time.

About six months later he had a tooth drawn under nitrous oxide anesthesia, and was peculiarly affected by it. He became cyanotic and remained so for some time after recovering consciousness, and was so weak muscularly that he was unable to walk home, nor was he able to walk alone for a week or more, and then only with a cane. He has never gone out without a cane since. From this time on, he became progressively worse for several months. Frequently fell down, always either forward or back, but never hurt himself. A labyrinth test revealed nothing pathological. Strabismus reappeared, this time of the left eye only. He was then taken to a neurologist, who made the diagnosis of multiple sclerosis and offered him no encouragement. At the advice of friends he took up massage treatment, and after two weeks was so greatly improved that he was able to run for a car on one occasion. The masseur was then obliged to go away for two weeks, and the patient went promptly back to his previous condition. Subsequent massage had no effect. Added symptoms also appeared in the arms, which were practically unaffected for a year after the onset. The arms grew very weak and a tremor appeared whenever he tried to use them, so that he was unable to write without tearing the paper, or to feed himself without spilling the food. Severe constipation for a time and some retention of urine were added later to his symptoms.

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* The first part of this paper was read at a meeting of an association of women doctors in Boston (Hotel Victoria), in 1915.

No real pain at any time throughout the disease, although he complained for a time of a girdle sensation around the lower thorax, and also around the head. He had a period of several weeks when taste was almost lost, and later a period of several months of partial amblyopia, when reading was impossible. At another time, for several weeks, he complained of hemianopsia. In spite of the strabismus he never had diplopia. Twice during the past four years he has been confined to the bed for periods of two and three months respectively. Each time it seemed to be because of great muscular weakness and a feeling of exhaustion. On at least four occasions he has had attacks resembling apoplexy, which passed off quickly, leaving no paralysis and the patient in the same condition as before. These all came on during the day, after some special exertion. Has not smoked for about a year. Closed his law office at the beginning of the disease, although he continued to see clients at home for a few months. Has made no attempt to conduct any business for three years, on account of some mental enfeeblement of which he is conscious, but which is not apparent to his family. They declare him to be in his usual mental condition except that he is a little overexcitable, laughs and cries easily, and occasionally repeats himself, as an old man will do. Has always slept well, has good appetite, and does not, apparently, worry about himself. He is possibly a little too care-free. Spends his time reading in an unsystematic way.

Physical Examination: Well developed and nourished man. Trunk better nourished than limbs. Sits all day in a large chair with feet propped up. Is moved there, with very little coöperation on his own part, by his wife and son. Makes no attempt to rise in greeting. Extends his hand, which trembles violently, and says, "How—do—you DO," with a pause between each word and extra emphasis on the last. His voice is not modulated, but is all on one tone. This is his invariable method of speaking. The enunciation is uncommonly distinct, possibly because of special effort. In answering questions he delays some seconds before commencing a reply. Facial expression lacking in mobility. Absence of lines in the face, even while talking. Lips rather full and relaxed. Both these characteristics are newly acquired.

Examination of Cranial Nerves: Pupils small, equal and react to light and distance normally. Palpebral fissures equal and normal. Marked internal concomitant strabismus. All movements of the external ocular muscles can be made, including those of the external rectus, but are made weakly and cannot be sustained. There is slight lateral nystagmus, not present constantly, but only on extreme lateral deviation of the eyeball, not on vertical deviation. No diplopia or hemianopsia can be determined. Vision about normal with glasses, slightly myopic without. Visual fields concentrically slightly narrowed. Slight loss of discrimination of colors. Ophthalmoscopic examination showed optic disc pale, outline slightly cloudy, vessels not tortuous. All movements of the facial muscles are possible, but weak, some tremor induced. Sensation normal on right side of face and head, but diminished to touch, pain, and temperature on the left. Tongue protruded fairly steadily in the median line, not far beyond the teeth. Taste normal to sweet and sour substances. Palate moves normally. Hearing normal, but there seems to be delayed perception of sound. No hyperacusis or tinnitus.

Head is held steadily without tremor on the trunk. Can be turned in all directions with normal strength, but is almost invariably held in the median line. No stiffness of the neck. Arms are rather thin, although muscles feel quite firm. No spasm on passive motion. All movements made weakly, however, and accompanied by a violent tremor involving the whole arm from the shoulder. Oscillations are at the rate of five to eight per second. The usual tests for ataxia are both impossible and unnecessary as the ataxia is very apparent. Marked adiodococinesis. Triceps, biceps, and radial reflexes about normal in right and slightly decreased in the left arm. No Jacobson. In both hands the interossei are greatly wasted. Grasp is fairly strong, but intermittent. No tremor when the arms are at rest, but when motion is attempted the tremor increases with the extent of the motion.

In the lower limbs the thighs are quite wasted, calf muscles about normal. Measurements equal on both sides. Double Babinski. Knee jerks and ankle jerks both greatly increased. Double ankle and patellar clonus. Spasm in both knees on passive flexion and extension. Marked ataxia in heel to knee test, tremor similar to that described in the arms on attempted motion, none at rest. There is some loss of strength. Sensation normal on right arm and side of face, diminished on left. Somewhat reduced over entire left side of body. Temperature sense also diminished. No vasomotor or trophic changes, skin and keratin tissues normal. Cutaneous reflexes not tested. Electrical reactions not tested. No contractures anywhere. Some atrophy of the interossei.

Station is very unsteady, apparently due to both weakness of the muscles and to incoördination, as well as to vertigo, from which the patient suffers only when attempting motion. Cannot stand without assistance. Sways forward and back, never from side to side. Not more pronounced with eyes closed. Gait shows muscular weakness, active spasm, ataxia, and cerebellar staggering. A general tremor of the whole body is produced. Back held rigid, whole body bent forward from the hips. Toes drag, although passively foot can be brought easily beyond a right angle with leg. Physical examination otherwise negative. No stigmata of degeneration. Urinalysis negative for albumin, sugar, and lead. Wassermann on both blood and spinal fluid negative. No excess of lymphocytes or globulin in spinal fluid.

Differential Diagnosis: First should be ruled out *functional disorders.* Many features of *hysteria* are present. In the motor system we have paralysis and paresis, spasm tremors and the history of seizures of various kinds. In the sensory system we have hemianesthesia, contracted visual field, transitory loss of vision and taste. In the psychic sphere we have lack of will power, excitable disposition, easy laughter, and tears. We lack the customary fondness for sympathy often observed in hysterical cases. But there is no need of considering hysteria as the sole trouble present when we have such definite signs of organic disease as are supplied by Babinski's sign, increased tendon reflexes and the slight though definite optic atrophy. These three things of course indicate organic trouble, but it is possible that there is some element of hysteria in this case, too.

Neurasthenia can be ruled out on the same grounds, although that diagnosis was held by his family physician for some time, who considered the tremor, the weakness, the increased reflexes, the mental asthenia, the sensory disturbances, and the easily exhausted vision only exaggerated symptoms of the neurasthenia prevalent in the family. The clonus he considered spurious. The Babinski had not appeared when he made his diagnosis, and he never had an ophthalmoscopic examination done. Our patient had never had the insomnia, the phobias, the headaches which accompanied neurasthenia in the other members of the family. He may indeed be afflicted with neurasthenia, but it is certainly not all of his trouble, as he and his family believe still.

In many ways this case resembles another so-called neurosis, paralysis agitans. There is muscular rigidity, tremor, increased reflexes, face expressionless and mask-like, speech monotonous and deliberate, face held in the median line and mental enfeeblement. But here the resemblances ceases. In this patient there is no tremor while at rest; in paralysis agitans it would be constant and would be reduced by muscular effort. In this case the tremor is extensive, involving the whole arm; in paralysis agitans it is more marked in the distal portions of the limbs. The latter disease seldom begins as early in life as in this case, and for some reason almost always shows the peculiar bent forward position in walking and also in sitting, which is not a prominent feature here. Ankle clonus is not present in paralysis agitans, but it often parallels our case in producing an uncommon amount of disability in proportion to the physical findings, together with a somewhat similar mental condition to that of our patient.

Considering the tremor as the prominent symptom we should also have to rule out *essential* tremor, a disease which produces an identical tremor to the one described. But it is a family disease, and does not carry with it such a train of other symptoms, since it is probably a neurosis without lesions. Alcoholic tremor, which also occurs only on motion, does not need consideration here. Nicotine poisoning would certainly have to be considered in finding a cause for this case of multiple sclerosis, but could not be considered as an entity.

Having sufficient signs of organic lesions, and being obliged to abandon functional conditions, we are led definitely to multiple sclerosis and possible associated functional disturbance, by the irregularly distributed paralysis, with some reflexes increased, others diminished, with Babinski, intention tremor of which the nystagmus is a part, scanning speech and partial optic atrophy. It is easy to throw a collection of symptoms together and call it multiple sclerosis, but before doing so a number of other possibilities in the way of organic disease should be ruled out.

In the first place, disease confined solely to the *peripheral nerves* must be excluded. The quadraplegic distribution suggests *multiple neuritis,* also the intention tremor and the optic nerve trouble. But in multiple neuritis the reflexes are diminished and the limbs are flaccid, and are particularly weak in extension. There is no true clonus, and there are prominent sensory symptoms. Atrophy comes on and vasomotor changes, but not any abnormal reflexes. Contractures are quite likely. Henschen has reported a case of diphtheritic polyneuritis which went on to become multiple sclerosis, as shown by autopsy.

Leaving the peripheral nerves, we come to *cord diseases. Chronic poliomyelitis* can be ruled out on the grounds just given, that is, it would give a paralysis of the lower segment type. The wasted interossei and the flaccid arms in our case suggest that there must be involvement of the anterior horn cells of the cervical region, but there is no evidence of such involvement elsewhere.

Degeneration of the posterior columns. The patient told me quite frankly that he supposed he had locomotor ataxia, but I had to rule it out because of the increased reflexes and spasticity, and the absence of lightning pains and other tabetic symptoms, as well as the history. Any ataxic condition the public is prone to label syphilis, regardless of the unhappy effect on the patient,—not only the public in this case, but the man's oldest neighbor, a physician.

Primary lateral sclerosis. Such a condition may be possible uncomplicated. While it would account for the condition in the legs, as far as spasm and increased reflexes are concerned, it would not satisfactorily account for the condition in the arms, nor for the sensory disturbance, the eye symptoms, and the general weakness.

Erb's spinal paralysis, of toxic origin,—usually syphilis of the lateral columns as tabes is of the posterior columns. This accounts nicely for the picture in the legs of this patient, but leaves unaccounted for the flaccid arms, the tremor, the speech defect, and the sixth nerve involvement.

Secondary spastic paralysis, following chronic myelitis or thrombosis of spinal vessels, caries of the vertebrae, tumor pressure, fracture or meningo-myelitis. Any of these causes would also produce a spastic paralysis below the level of the lesion. Some of them also produce a flaccid paralysis by involvement of the anterior horn cells at the site of the lesion. In this way we could account for the condition of both the arms and legs in this patient, by supposing the lesion to be at the level of the arm area, but we should still have to seek further for an explanation of the condition in the head, and of the tremor. The possibility of trauma at the time of the fall on the ice is somewhat suggestive, but there were no symptoms other than brief unconsciousness at that time. There was no pain to have been suggestive of myelitis, and what few sensory disturbances he has had were slight and have failed to persist. Furthermore, he had had strabismus before the fall.

Combined System Diseases. If a lesion in no one tract will account for the symptoms in this case, perhaps we can account for them by a lesion in more than one tract. There are two types of combined system diseases to consider. The first is *postero-lateral sclerosis or ataxic paraplegia.* This condition, in some cases, is difficult to differentiate from multiple sclerosis, as it may clinically almost correspond to it. Had my case not presented the nystagmus, the scanning speech, optic atrophy, and intention tremor, in other words, had it been confined to the cord, the remaining condition could not have been differentiated from ataxic paraplegia. In reality it is a limited ataxic paraplegia plus other lesions. The dorsal and lateral tracts are also involved in another disease which presents a somewhat different picture clinically,—*Friedreich's ataxia.* In order to exclude this hereditary or family disease, I examined the patient's mother, who was said to be awkward. I found her quite ataxic in all motions of arms and legs, speech incoördinate and slovenly within normal limits, attended by slight grimacing. She is an old woman, but goes out every day alone, although she frequently falls down. Also falls down stairs in the house occasionally. In all other respects, normal. She and her son have neither form of hereditary ataxia as it is commonly known, probably the condition in each of them being founded on neuropathic tendency. Friedreich's ataxia shows flaccidity and absent reflexes, rarely has eye symptoms, has an atypical tremor and speech defect, while the hereditary cerebellar form lacks spacticity until late in the disease. Furthermore, no other case resembling ataxia has ever appeared in the family on either side, for several generations certainly, or as far back as their knowledge Strange to say, our patient's uncle has an invalid wife in much the same condition as this patient. She was not where she could be examined by me, and, so far as any of the family know, no diagnosis has ever been made.

One form of *secondary posterolateral sclerosis* is related to anemia. It is possible that some of these forms which have been considered primary may be in reality secondary. Some cases certainly are definitely secondary. Interstitial changes arise and are later followed by sclerotic foci. They may also arise in pellagra, ergotism, and chronic wasting diseases. They are accompanied, as would be supposed, by neuralgias and sensory disturbances. Unless the cause is suspected and measures taken toward cure, the primary condition usually results in death after a shorter period than our patient has survived. But with anemia in mind, we had a blood count and found it normal. Riggs reports several cases in which anemia and multiple sclerosis were combined, and he thinks both came from the same toxic origin, and believes the nerve symptoms may precede the blood picture by some time.

The other type of combined system disease is *amyotrophic lateral sclerosis,* involving the anterior horns and the lateral columns. It is worth considering in this case, because we have definite signs of pyramidal tract involvement in the legs and of anterior horn involvement in the arms. If the anterior horn cells were involved before the lateral tract we should still have flaccidity, even after lateral tract involvement, because there would be no way by which spasticity could be produced after the anterior horns were gone. But in this case we have definite pyramidal tract symptoms. The sequence in antero lateral sclerosis is finally a complete anterior sclerosis, including the nuclei of the cerebrum, which are analogous to anterior horn cells of the cord. When this takes place any spasticity which had been present would of necessity disappear, leaving atrophy and flaccidity throughout. After more than four years there is no indication that this is taking place in this patient. There is still practically no atrophy. For this reason, and on account of the less complete loss of power, the slight but definite sensory involvement, the nature of the tremor, which is not fibrillary, and the non-appearance of bulbar symptoms, we can rule out amyotrophic lateral sclerosis.

Syringomyelia was easily ruled out on account of the absence of the peculiar sensory features and of complete atrophy with vasomotor changes in any one set of muscles. If our anterior horn cells are involved at all they are only lightly attacked, perhaps with minute microscopic plaques.

Cord and brain symptoms in the same patient always suggest *cerebrospinal syphilis.* The absence of positive laboratory findings and also the absence of the quite usual headache and third nerve involvement is against it. In the cord it has already been ruled out in the form of disease of the posterior or the lateral tracts. It can be ruled out as meningitis or meningomyelitis, because there is not and has not been enough pain, especially pain of the back and limbs. Other forms of meningitis can be ruled out in the same way.

Concussion of cord and brain is suggested by the history of falls. It is quite possible that hemorrhages which have since been organized might have been the cause of this trouble, but it seems as if there would have been some symptoms between the time of the last fall and the onset of the present illness. My theory is that the falls were the result rather than the cause of the disease, the actual onset of the unsteadiness being much earlier than the patient realizes.

That the conditions might be a *diffuse encephalomyelitis* would certainly have to be considered. This is probably the most difficult condition to rule out. There is very little, however, in the history to suggest a general infective process, except the fact that there are multiple lesions of some sort to be accounted for. Had the attack of malaria appeared before instead of after the initlal strabismus, it would have been easy to attribute the whole condition to malaria. If it is infective at all, it is certainly a low grade type, such as is seen in chronic arthritis. Starr says that a diffuse encephalitis is often the starting point for the so-called cases of multiple sclerosis. Some authorities consider the two conditions identical. Most authorities, however, seem to consider sclerosis, occurring in the form of multiple foci, a separate condition from similarly multiple foci of inflammation: in other words, although sclerosis may be secondary, it may also be primary, at least as regards inflammation. That this case is one of the latter type is suggested by the neuropathic history, the absence of any other signs of chronic infection, the gradual progress from the onset on, the symptoms showing a less absolutely destructive lesion than inflammation would be likely to produce, no pronounced pain or atrophy or paralysis, and the strict adherence to the rather definite and fixed symptomatology commonly found in cases which have afterward been shown postmortem to be sclerosis. Still, if a disease with multiple foci cannot be attributed to vascular conditions, nor to that most common infection of the nervous system, syphilis, no stone should be left unturned in the effort to unearth another chronic infection, febrile onset or not, typical symptoms or not. Unfortunately, this patient's psychic condition has been just enough altered to make it impossible for any of the number of physicians who have seen him to interest him in any further diagnostic measures.

Brain Lesions. With the exception of the flaccid condition of the arms and the wasted interossei, we could attribute this trouble to conditions entirely within the brain, or rather the cranium. Imagining a lesion in the motor cortex, or the internal capsule on each side, and in the sensory area of the cortex on one side, or the posterior limb of the internal capsule, we can account for the spastic paralysis and the hemianesthesia, not with single, but with multiple lesions. The condition of the second and the sixth nerves and the mental condition would require still more lesions to be included. We should even then have to leave the brain to account for the arms.

Huntington's chorea, a diffuse chronic inflammation of the cerebral cortex, was ruled out by the amount of disability, the sensory and cranial nerve involvement, the condition of the arms, and the different character of the speech defect and tremor.

Paresis, presenting a similar anatomical lesion to the above, did not have to be ruled out after a consideration of the mental defect. The changes in our patient seem to be more those of disposition and concentration, and are not very marked except on occasion. Seiffer, who made a study of mental states in multiple sclerosis, believes there is no qualitative difference between the dementia which occurs in multiple sclerosis and other dementia. Dercum has reported a case which was diagnosed as paresis during life, in which a post-mortem examination showed multiple sclerosis with most of the lesions in the cortex. Usually in paresis the tremor is finer and there is seldom nystagmus, and the symptoms are those of a diffuse rather than multiple lesions.

Brain tumor is not suggested except by vertigo, optic neuritis, and the cerebellar staggering, which in this case point undoubtedly to lesions in the cerebellum, perhaps several large lesions fused into one, but which do not point to an exclusively cerebellar involvement. The symptoms which might be referred to increased intracranial pressure can better be accounted for by multiple focal lesions.

Finally, we may consider a form of *pseudo-sclerosis*, of which only a few cases have been reported, in which the symptoms are identical in all respects with multiple sclerosis, but which post-mortem shows no lesions. This condition certainly could not be ruled out if such a condition exists. It is difficult to imagine any functional disorder doing exactly this, but when this possibility was mentioned to the patient's wife she expressed an opinion that if it could take place with anyone, it could in her husband, as she has considered him highly neuropathic for many years.

There are probably as many more conditions which might occasionally have to be differentiated from multiple sclerosis, for a disease with multiple lesions naturally takes multiple forms. The three symptoms first mentioned by Charcot are strangely likely to appear in every case, although it has been recognized that they frequently do not go on to completion in this disease as in some others. Their great prevalence may be due to the fact that we do not often make a diagnosis of multiple sclerosis without them. Given them, we have the disease; given the disease, we have them. The diagnosis is made about four times as often in Europe as here, perhaps because they make it on the grounds of multiple lesions, regardless of the presence of the Charcot triad, which, it seems might easily be absent, even with many other lesions present.

The gait is often the first symptom which is particularly observed. It usually shows some combination of the spastic and the cerebellar. It is rare to find the lower extremities uninvolved. Unilateral cases have been recorded and those which changed from side to side during the disease.

The tremor is usually, as in this case, more marked in the upper extremities. My patient knocks most things he reaches for onto the floor, and can handle only those things which are unbreakable. He drinks through a rubber tube because a glass cannot be put near his mouth without risk of his breaking it by intention tremor of the hands.

The nystagmus is, in this case, of the type it should be in order to correspond with the tremor of the intention type. His nystagmus comes on only when he attempts to use his eyes for a definite purpose. While sitting at rest, with his eyes not especially in use, there seems to be no nystagmus, but in trying to fix on an object at an angle, without turning the head, the nystagmus becomes quite marked. I believe it is recorded that about 14% of cases show constant nystagmus. It seems reasonable to think of the nystagmus as intention tremor of the eye muscles, but since the eye muscles are virtually in use all the time, a constant nystagmus might very well occur.

Some authorities consider optic atrophy more important than nystagmus, but since a plaque need not necessarily be located so as to cause optic atrophy although many plaques might be demonstrated in the body elsewhere, it seems to me that nystagmus would be more typical, while possibly optic atrophy may be an incident which is equally common. Vision frequently does not correspond to fundus finding, and often suggests hysteria. This is undoubtedly due to the fact that the optic nerve may be involved in neuroglia proliferation while at the same time the axis cylinders may remain intact. Pupils do not seem to be typically involved in this disease, nor do cranial nerves, although the sixth was involved in sixteen out of twenty cases I have seen.

The sensory symptoms are not often as well defined as in this case. Fremd says they are are usually at the distal portions of the limbs. They have been throughout distributed only to one-half of the body in this case. As in the case of many of the symptoms of multiple sclerosis, their transient quality and changeability make one think of hysteria.

Vertigo, which was present in this case I am sure, at least part of the time, while he was still ambulatory, although he always denied it, has not troubled him, apparently, while sitting. If present in this disease it is difficult to say whether it is due to involvement of the cerebellum, or the nystagmus, and consequent dancing of objects before the eyes, or to diplopia. He denies diplopia, does not complain of the effect of the nystagmus when seated, and we are thus obliged to consider it as cerebellar. This is confirmed by the fact that his station was poor, apart from lack of good muscle control, even with the eyes closed.

It is rather odd that this disease should so systematically develop a tendency to spasmodic laughter. In this case it was not due by any means to lack of coördination of the muscles used in laughing. The impulse to laugh seemed uninhibited. Crying has not been a prominent part of his program, and is seldom so to as marked a degree as laughing.

The cerebral features are often made to include the speech defect, but it seems more natural to consider it a motor trouble, spasm of the muscles of articulation. The patient pounced on the end of each sentence in the same way that he pounced on an object when grasping it. Excitement greatly increases this symptom, as it does most of his symptoms.

Charcot, long ago, described a typical facies, —lips hanging down, half open, expression of mild stupor. This exactly describes this patient. Until I saw a picture of him taken ten years before I had supposed it to be more or less his natural expression, increased by illness. But it is plainly a change entirely due to the disease. There is no loss of fat in the face, but considerable elsewhere. Actual atrophy does not appear to have occurred apart from the interossei and possibly the thighs.

In the consideration of the probable pathology in this case, the idea is very strongly suggested that whatever agent is responsible for the condition, its work began in his childhood, before his tendency to lie on the floor began,—a habit which was considered by his family to be undoubtedly due to some discomfort he would never mention, and before the first appearance of strabismus. One would certainly be justified in considering the possibility of a specific infection of some kind which attacked the mother, the mother's sister-in-law, and the patient. Nothing can be recalled of an acute attack, but the history included a short time when the two families were more or less closely associated domestically, during the patient's childhood. The symptoms of nervous diseases came on more rapidly in the aunt, but subsequently were almost matched by the unrelated patient. The mother had meanwhile developed many similar symptoms to a very much less degree. As regards the location of the lesions. I would venture to prophesy that autopsy will reveal several plaques in the lateral columns of the lumbar region, others in the anterior horns of the cervical region, one in the posterior limb of the internal capsule, others in the nucleus of the sixth nerve, one behind the optic disk of each side, and many small ones in the frontal region.

Since the patient refuses all medical care, no treatment is possible. An autogenous vaccine has been urged but refused. Not much is permitted, even in the way of nursing and hygiene. Unless his will power weakens or his sufferings increase, it will probably continue thus until he ultimately succumbs to intercurrent disease,—nephritis or pneumonia, most likely. The apoplectiform and epileptiform seizures, to which he is liable, may cause complete disability at any time, although it is reported that even a complete paraplegia following such an attack may be recovered from. Several remissions may be considered to have occurred in this case, since he got around again twice after having been temporarily bed-ridden. Bulbar accidents may be looked for, in which case death would be directly due to the lesions of the disease, a rather rare conclusion. If the medullary centers were involved more often in this disease it might be better for its unfortunate victims.

APPENDIX.

Five years after the above history was written the patient is still living, now quite helpless. He has been bed-ridden for four years, but can be moved to an invalid chair, where with the aid of supports he sits for a few hours every day. He has no motion of any limb except a useless amount in the right arm. He is unable to see for reading, but can recognize people and objects fairly well. Optic atrophy has progressed to a considerable degree. Other neurological findings have remained about the same.

He has twice had attacks of retention of urine, which lasted several days, requiring catheterization, but both times he came back to his previous condition of continuous involuntary flow from a full bladder. He has had little rectal retention throughout. In spite of poor nursing at various stages, he has not developed trophic sores. Speech is almost incoherent, and the mind seems rather feeble. He has kept in a very cheerful frame of mind, frequently having bursts of uncontrollable laughter, which are perhaps not as merry as they sound. He shows a rather childish irritability, some loss of memory for recent events, considerable loss of the ability to concentrate, great indifference to the cares of the world. The fact that his wife must support the family leaves him quite content, although he would have been horrified at the thought of it a few years ago. The death of his almost worshipped daughter made very little impression on him. His own comfort, however, matters a great deal.

There has been no treatment of the case, except of symptoms as they appeared, and even that was sometimes refused absolutely. Efforts have been largely directed toward keeping his mind content and his courage good, and also toward keeping him from the restlessness which has been his great trouble. It is fortunate for these chronic invalids that there are so many cults which promise mental healing. He has tried one after another and has gotten happiness from each in turn. His former intelligence would have scorned to be helped by anything save established philosophy, religion and psychology, but in his enfeebled state, these fantastic cults have been invaluable, chiefly because they promised cure, which, of course, nothing more scientific could do. He is unable to acquire in legitimate ways the state of mind which would enable him to cope with his condition. Lately he has become more and more a burden to himself and his family and is less interested in cures. Sometimes he asks for drugs so that he can "go to sleep and forget."

CLINIC ON THE DIAGNOSIS AND TREATMENT OF NEUROSYPHILIS.*

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(Concluded from page 730.)

CASE 12. Tabes Dorsalis: Orissa I. is a woman 37 years of age. For the past eight years she has been troubled with acute lancinating pains of the legs, which at times had been so severe as to necessitate hypnotics and prevent her from working. She had been told that she had neuritis, and was given various drugs, which she claimed had had no effect. In addition to her pains, she had some difficulty in walking, especially in the dark. The neurological examination showed unequal pupils, which reacted poorly, absent knee jerks and ankle jerks, and a positive Romberg. The blood and spinal fluid were positive. Everything, of course, was consistent with the diagnosis of tabes dorsalis. Under intravenous injections of arsphenamine, there was marked improvement of the symptoms. The pains have entirely disappeared, and have been absent for a period of a year. The gait is markedly improved. The spinal fluid, however, remains positive. According to my experience, a few intraspinous injections would probably change the spinal fluid reactions to normal, and these injections are now indicated.

CASE 13. Improvement following Treatment in the Paralytic Stage of Tabes Dorsalis: James F. is a man 34 years of age, who was practically bedridden as the result of his tabes. He had all the classical symptoms of the disease, including Argyll-Robertson pupils and strabismus, absent knee and ankle jerks, impotence and such marked ataxia that he was unable to walk even with the aid of canes. When seen at the hospital, he had already received quite a number of intravenous injections of arsphenamine, but had steadily become more helpless. He was then given intraspinous injections of Swift-Ellis serum, reinforced with about one-third of a milligram of arsphenamine. He has now had nine such intraspinous injections, and at the same time is able to walk fairly well without the aid of a cane, and with the aid of a cane is able to go about freely. When he first came to the clinic he was carried from a taxicab to the operating table in the arms of an attendant. Today he comes in the street car, and walks into the operating room unaided. This case is particularly interesting, not only from the therapeutic results, but from the fact that when seen he had a negative blood and spinal fluid. It is generally believed that the cases of tabes most amenable to treatment are those which show high cell count and evidence of an active inflammatory process. In a general way, this is quite true. However, this is somewhat of an exception to the rule, and brings out the rather interesting point, that starting with the practically negative spinal fluid, a couple of intraspinous injections resulted in the production of a comparatively strongly positive spinal fluid, which remained positive for a number of months and then again approached a negative condition.

I have no hesitation in insisting that much symptomatic improvement may be obtained in the treatment of tabes. The earlier the case is treated, the more effective the treatment. However, good results are not infrequently obtained in the late cases. This does not mean that every case of tabes will show satisfactory improvement, but that many will. Theoretically, the results are obtained by an improvement of the inflammatory process, the removal of the spinal cord irritation, which then allows the patient to utilize the undestroyed tissues, which, in many cases, are quite sufficient to carry on all necessary functions.

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I can attempt to summarize in a few words the type of treatment advised in cases of tabes. To begin with, intravenous injections of arsphenamine at intervals no longer than once a week, and in cases which bear the treatment well, treatment may be given twice a week. If, at the end of two, three, or four months, satisfactory improvement has not been obtained, then intraspinous injections are added. Intraspinous injections are nearly always quite painful to the tabetic and there is always the possibility of producing acute sphincter disturbance. Hence, I believe it is advisable to see if one can get satisfactory results without intraspinous therapy. However, the pain and the possibility of the sphincter disturbance are not sufficient to contraindicate the use of the intraspinous method, and it should be almost invariably used either to aid unsatisfactory intravenous treatment results, or to finish off intravenous treatment.

We should not neglect the important consideration of the general condition of the patient. Tonic treatment consisting of good food, good hygiene, hydrotherapy, and massage, are important adjuvants. Optimism is especially important, and it is the physician's duty to inculcate it. In the ataxic cases reëducation is important.

Paresis, in the past, has been considered an absolutely hopeless condition, fatal in 100% of the cases, and leading to more or less rapid mental deterioration. The vast majority of the cases have a steadily progressive downward course, the average duration of life being about two to two and a half years after the onset of symptoms. A small percentage of the cases have remissions, that is, a period of improvement lasting from a few months to a year or so. In the Commonwealth of Massachusetts, about 2½% of the cases committed to the State hospitals have shown remissions, the vast majority of these lasting under six months; a few as long as one year. Under treatment the results are often much better.

Case 14. Therapeutic Results in General Paresis: Albert W. was brought to the hospital in his forty-sixth year from the court, having been arrested for grabbing and running away with a woman's purse. The patient had been a successful business man, and the larceny was entirely out of keeping with his past career. The history showed that for some months he had been very peculiar, attempting to strike his child with a red-hot poker, embracing his wife in the street car, sleeping in the midst of business transactions, and in general showing many abnormal mental symptoms. A couple of days after his entrance into the hospital, he had an apoplectiform attack, with a left hemiplegia, the symptoms of which lasted less than 24 hours, and were followed by a wild excitement. The blood and spinal fluid gave positive Wassermann reactions; there were 75 cells per cmm., and a paretic gold sol reaction was obtained. Several months of semi-weekly injections of arsphenamine, of 0.6 gram each, resulted in symptomatic improvement of the patient, and at the end of three months his spinal fluid findings were negative. Five years have now elapsed since his return to the community, and he has had no recurrence of symptoms.

Case 15. Therapeutic Results in General Paresis: The case of Jennie R. is somewhat similar. She was committed as a paretic. She was confused, emotionally unstable, and her memory was exceedingly poor. The blood and spinal fluid Wassermann reactions were positive; there were 80 cells per cmm.; globulin and albumin in excess. The pupils were stiff and unequal. The knee jerks were sluggish and the ankle jerks could not be obtained. A few months of treatment were sufficient to produce a negative spinal fluid, and now for almost five years the patient has been apparently entirely normal both physically and mentally.

These two cases with every appearance of paresis represent a very small minority of cases in which the results are fairly easily obtained and are markedly satisfactory. I would not, by any means, have it appear that this is the rule, but such cases can be multiplied.

Case 16. Therapeutic Results in General Paresis: William B. was brought to the hospital following a convulsion. He was confused and apparently quite deteriorated. He was 53 years of age. The nuerological examination showed pin-point pupils which were rigid and irregular. Speech defect was present. Otherwise the physical examination was negative. The blood and spinal fluid Wassermann reactions were positive; there were 20 cells cmm.; albumin 3+, globulin 3+, and a paretic gold reaction. The patient was given intravenous injections of salvarsan twice a week in doses averaging 0.6 of a gram. Mercury was given intramuscularly at the same time, as well as potassium iodide. The spinal fluid was drained once or twice a week, as much being taken as would flow rapidly through the needle, averaging from 30 to 50 cc. This treatment was persisted in for 4½ months without cessation, and then reduced to one treatment a week. At the end of one year, the spinal fluid had become negative, but it should be noticed that it took an entire year to obtain this result, and more than 50 injections of arsphenamine. Symptomatic improvement was first obtained about three to four months after the institution of treatment. The patient is still continuing to receive treatment because his blood Wassermann is positive. He has had over 90 injections of arsphenamine. He has been working at his old position for over three years, and is apparently as vigorous and hardy, both physically and mentally, as a man of thirty.

The preceding three cases illustrate the very satisfactory results that may be obtained by intensive intravenous therapy in cases diagnosed as paresis. Many cases, something more than one-half, do not do well under this form of treatment, or, for that matter, under any type of treatment. I am not in a position to say whether or not intraspinous therapy is of any real value in the treatment of general paresis. I do believe, however, that it is indicated in those cases which do not improve under intravenous therapy. The drainage of the cerebrospinal fluid may be of value. On this point, however, I again am not in a position to state a definite opinion, but my general experience has not convinced me that it is of positive value. However, in those cases which do poorly under other forms of treatment, I believe that it is indicated.

Another addition in the treatment of paresis that has been advocated is the intraventricular injection of arsphenaminized serum. The procedure consists of making an opening in the skull in the frontal region, performing a ventricular puncture, and, after the withdrawal of the ventricular fluid, introducing serum into the ventricle. Theoretically the flow of cerebrospinal fluid is from the ventricles, through the brain substance, and through the foramina of Luschka and the foramen of Magenda, so that, theoretically, substances introduced into the ventricles tend to diffuse throughout the brain substance.

CASE 17. Therapeutic Success with Intraventricular Injections in General Paresis: Arthur F. was apparently a rapidly deteriorating paretic. He was apathetic, his memory was poor and his judgment bad. He had unequal, stiff pupils, a speech defect, and very lively tendon reflexes. The Wassermann reaction in both blood and spinal fluid was positive; there were 49 cells per cmm.; globulin 3+, albumin 3+; a paretic gold sol reaction: 5555553210. He was given intensive intravenous injections of salvarsan, with intramuscular injections of mercury, and potassium iodide by mouth. The spinal fluid was drained at weekly intervals, but despite these procedures, he apparently became worse and worse. Hence, at the end of over two months, it was decided to do a trephine and give intraventricular injections. This was done in June, 1916. Three injections were given and intravenous treatment continued. At the end of three months, after the three intraventricular injections, the patient had a negative spinal fluid and was apparently entirely well symptomatically. He was last seen in October, 1919, more than three years later. During this entire period he has been considered as normal mentally as well physically. He has been employed for more than a year driving an automobile delivery wagon, and aside from the physical signs, which are as before, the examination shows him to be in perfectly good condition.

I have had several such striking results in the use of intraventricular treatment. I would candidly say that the majority of cases which I have given intraventricular treatments have not been satisfactory. It is only fair to say, however, that the only cases on which I have used this method of treatment are those which have failed to react to any other treatment, and have practically all been very advanced cases. The results have, however, been striking enough in some cases to justify the procedure, especially when there is no other hope for the patient. The method is not particularly dangerous, and with special care should not be feared.

In a general way, it may be said that at least 25% of the paretics who have received intensive treatment of one form or another have had remissions of longer or shorter duration. Many have been well for a number of years. And, therefore, I believe it is possible to state that the prognosis of paresis is better when treatment is instituted than when it is not. In no particular case would I be willing to say that good results are to be expected, but rather make the general statement that there is a chance of satisfactory improvement,—and by satisfactory improvement is meant the ability of the patient to take his place in the community as a self-supporting individual,—and that this chance is about one in four, as contrasted with one in fifty when no treatment is given.

To summarize, then, the treatment that I am in the habit of advocating in paresis: Every patient except those in an advanced stage, should be treated. The treatment may be started by intravenous injections, given at least as frequently as twice a week. It is probably wise to give intramuscular injections of mercury and iodides at the same time. Either frequent drainage, or probably more satisfactorily, intraspinous injections of arsphenaminized serum may be given in addition. Those cases which do not do well under this treatment should be considered as possible candidates for intraventricular injections. I would like to call attention to the relative frequency and intensity of the treament given. Injections of arsphenamine twice a week over a period of months, and often over a period of many months, is often necessary to obtain results in paretic neurosyphilis. Let us bear in mind that in the treatment of syphilis, even when begun in the early stages, many months, or probably many years, are necessary to sterilize the patient. In an involvement of the central nervous system, into which the penetration of drugs is much less easy, we should certainly not expect quicker results. On the contrary, more treatment will necessarily be required.

In my experience, the cases of meningitis and acute meningomyelitis will react very favorably to the intensive or frequently repeated injections. In the parenchymatous types, tabes and paresis, for example, many months, or often years, are required to obtain results that we may consider satisfactory. Optimism and perseverance are essential, both from the patient and the physician. The problem of neurosyphilis is essentially different from the problem of dermatological syphilis. In the latter, the weeks or months are of no consequence, or very little consequence. A mucous patch is unpleasant; it is infectious and may lead to leukoplacia or carcinoma, but not rapidly. Hence, time is not a very essential factor. In neurosyphilis, the damage being done affects a most important portion of the body, and if unchecked will lead to incapacity, insanity, and death. Hence, in treating neurosyphilis, we are confronted with the necessity of obtaining therapeutic results in order to avoid those consequences. It therefore behooves us to work as rapidly and efficiently as possible. We can take a greater risk of the possibility of damage to the kidneys or liver as a result of treatment than we would care to take when the disease has affected only the more unimportant organs.

Spinal Fluid Findings in the Differentiation of Paretic and Non-Paretic Neurosyphilis.

It is often very difficult, and at times quite impossible, from the clinical picture alone to make a correct differential diagnosis between general paresis and cerebrospinal syphilis. While there are a number of definite rules by which one may be guided, there are so many exceptions to the rules that we are frequently confronted with a case in which it is impossible to say whether the process is one of a

	W. R. Blood	W. R., C. S. F.							Globulin	Albumin	Cells per cmm.	Gold Sol.
		1.0 c.c.	0.8 c.c.	0.6 c.c.	0.4 c.c.	0.2 c.c.	0.1 c.c.	0.05 c.c.				
I. G. P.	+95% —5%	+100% ...	+100% ...	+100% ...	+100% ...	+95%	+90%	+80%	+	+	1-200 Average 25-50 Plasma cells characteristic.	555542100
II. C. S. S. (Pure vascular type excepted.)	+60% —40%	+ 100%	+ 90%	+ 80%	+ 70%	+ 60%	+ 40%	+ 10%	+	+	1-2000 Average 5-200	0134420000
III. Tabes ("Burned-out" type excepted.)	+60% —40%	+ 100%	+ 90%	+ 80%	+ 70%	+ 60%	+ 40%	+ 10%	+	+	1-200 Average 25-50	0123320000

Formula I may occur in C. S. S. or tabes.
Formula II or III practically rules out G. P.

parenchymatous degeneration, *i.e.*, general paresis, or a diffuse meningovascular involvement, *i.e.*, cerebrospinal syphilis. The examination of the cerebrospinal fluid will give a very important differential finding in this regard in quite a number, if not the majority, of the cases. The accompanying chart illustrates this fact. The Wassermann reaction in the spinal fluid is always very strongly positive in cases of general paresis, that is, if we use but small quantities of spinal fluid, the reaction will still give a very strongly positive result. This is not always the case, however, with cerebrospinal syphilis. As ordinarily performed in the majority of laboratories, the Wassermann test is made using 1 c.c. of spinal fluid. In this case it is practically always positive in general paresis, cerebrospinal syphilis, and tabes. However, if one titrates the fluid, using 1 c.c., 0.8 c.c., 0.6 c.c., 0.4 c.c., 0.2 c.c., 0.1 c.c., and 0.05 c.c., it is found that while general paresis gives a strongly positive reaction in the vast majority of cases with 0.1 and 0.05 c.c., cerebrospinal syphilis and tabes give a positive reaction in these dilutions in only a very small percentage of the cases. Another differential point is obtained by the use of Lange's gold sol test. The cases of general paresis almost without exception give a reaction which has been spoken of in the literature as the "paretic reaction." This may be indicated by the following figures 5555421000. Many, if not the majority of cases of cerebrospinal syphilis and tabes give a much more mild reaction to this gold sol test. The formula that may be given as the frequent finding is 0134420000. It is found occasionally that the cerebrospinal syphilis and tabes cases will give a so-called paretic type of gold sol reaction. If, however, we find the mild gold sol reaction, it is very good presumptive evidence that the case is not one of general paresis; and if, in addition, we find that the Wassermann reaction is negative in 0.2 or 0.4 of a c.c., although positive in the lower dilutions, it becomes very highly probable that the case is not one of general paresis. The cases 9 (James S.) and 10 (Frank M.) are illustrations of this fact, although from the mental and physical findings it was not possible to say whether we were dealing with paresis or cerebrospinal syphilis. The fact that the findings of the Wassermann reaction in the spinal fluid, and the gold sol reaction were milder than would occur had the cases been paretic in type satisfied us that each case was one of cerebrospinal syphilis and not of general paresis. It was possible, upon the beginning of treatment, to offer a fairly satisfactory prognosis to the patients, and this prognosis was borne out by the subsequent course of the cases under treatment.

Indications for Lumbar Puncture.

From the point of view of the neuropsychiatrist, certain rules may be promulgated as to the use of lumbar puncture. These which follow are somewhat similar to those given by Ravaut:

1. Cases of early syphilis showing symptoms indicative of central nervous system involvement, namely: headaches, dizziness, ocular and aural symptoms, should have a lumbar puncture.

2. All cases seen after the early secondary stage that are not to receive most intensive treatment.

3. All cases treated from the primary or early secondary stage which do not give a negative Wassermann reaction in the expected time.

4. All cases showing mental or nervous symptoms, irrespective of the blood Wassermann reaction. This is based upon the fact that many cases of tabes, cerebrospinal syphilis, gumma, and even paresis, give negative blood Wassermanns.

In conclusion, it may be pointed out that:

1. The central nervous system is involved by syphilis very frequently in the primary and secondary stages; that this involvement is ordinarily benign and disappears symptomatically with or without treatment.

2. In a small number of cases, acute meningitis, meningoencephalitis, vascularitis, and gummas occur in the secondary period of the disease.

3. About 10% of all cases of syphilis develop late neurosyphilis, tabes, paresis, meningitis, meningoencephalitis, gummas, vascularitis.

4. Neurosyphilis is always serious, affecting the mind, utility, and life of the patient.

5. Diagnosis is often only possible by the aid of the spinal examination.

6. Therapeutic results are better, the earlier the diagnosis of syphilis is made, and the sooner treatment is instituted.

7. The spinal fluid is often positive long before definite symptoms are present; hence the need of frequent lumbar punctures.

8. More intensive treatment is usually required to treat neurosyphilis than in the treatment of non-nervous-system syphilis.

9. Cases of meningitis, acute meningoencephalitis, and mild vascular syphilis usually react favorably to intensive intravenous injec-

10. For these conditions intraspinous injections will at times accomplish more than intravenous therapy.

11. Tabes is more difficult to improve than the above mentioned forms. Many causes, especially the early ones, show improvement under intravenous therapy adequately administered, but with intraspinous therapy will frequently do much better. It is often the method par excellence.

12. Many cases diagnosed as paresis make fair recoveries under intravenous therapy.

13. Intraspinous injections and drainage of the cerebrospinal fluid may aid in the intravenous treatment of general paresis.

14. Intraventricular injections may at times give more favorable results than any other in the treatment of paresis.

REMARKS ON THE TREATMENT OF FRACTURE OF THE NECK OF THE FEMUR, INTRODUCING A LANTERN-SLIDE DEMONSTRATION OF THE ABDUCTION METHOD AND ITS RESULTS.[*]

By Royal Whitman, M.D., New York City.

These introductory remarks are designed to emphasize the distinction in method and purpose between the abduction treatment and conventional practice.

Fracture of the neck of the femur, by the abduction method, in the great majority of cases, may be treated like other fractures, with the aim of restoring function, and relatively speaking, with the same prospect of success.

Conventional treatment is mechanically inadequate to assure the essentials of functional repair, and both the rules of practise and the conclusions that support them are based upon this inadequacy. The extraordinarily bad results that distinguish this particular fracture from all others are due primarily to bad treatment. For contrary to the prevailing belief, and because of the mechanical and nutritive obstacles to repair, the outcome is more directly determined by the quality of the treatment than is that of any other fracture.

The typical fracture of the hip is of the central or intracapsular type. The fragments are of small area, lying in a lateral relation. The circulation is impaired by the injury and repair is unaided by external callus. The essentials for union are accurate end to end apposition, and the security that can be maintained only by mutual pressure of the fractured surfaces. The mechanical inadequacy of conventional methods to assure these essentials is apparent on analysis, and it has been practically demonstrated by the results.

In fractures at the base of the neck, the conditions are far more favorable. Yet no attempt is made to correct the deformity which must inevitably impair function. Indeed if the fracture is supposed to be impacted it must on no account be disturbed since such accidental fixation is the only assurance of union.

The initial inadequacy of conventional treatment is further emphasized by the perfunctory manner in which it is conducted and by the disregard of after care. For although repair is particularly slow and the neck of the femur subjected to great strain, patients are encouraged in weight bearing within a few weeks after active treatment has been discontinued.

Perfunctory treatment, which has been aptly characterized as a surgical ritual, is best exemplified in hospitals, which are supposed to set the standard of efficiency. As to practice at large, it is stated that of 120 cases of ununited fracture at the hip observed at the Mayo clinic, not one had been efficiently treated at the time of injury.[1]

The results are so extraordnarily bad, that paradoxical as it may seem, they are the chief support of the treatment that produced them because they are accepted as evidence that the outcome is practically determined by the situation and character of the injury, whether intra- or extracapsular, loose or impacted, and by the physical condition of the patient, rather than by surgical skill and efficiency.

A large proportion of the patients are aged and infirm, consequently the treatment of the patient rather than the injury always receives the first consideration in the text books. As a matter of fact, however, all patients receive the same treatment. It may vary in quantity but the quality is the same for old and young. The standard of success is union of the fragments without regard to the range of joint motion or to the quality of the gait. Function, in the words of an authority, "is forever impaired, no matter whether the fracture has taken place within or external to the capsule, whether it has united by ligament or bone, shortening of the limb and lameness are the inevitable results."

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[*] Presented at a meeting of the Springfield Academy of Medicine, September 14, 1920.

This analysis is presented in support of the statement that the rules, precepts and standards of conventional practice are based upon the mechanical inadequacy of the methods hitherto at command to apply the surgical principles that govern the treatment of all other fractures, and that the results demonstrate primarily inadequate treatment rather than inadequate capacity for repair.

It is important to establish this proposition, because the question at issue is not of the relative superiority of the abduction method in providing the opportunity for repair since this is physically demonstrable. It is whether efficient treatment is worth while, in other words, whether the result is determined primarily by chance or by surgical intervention.

The second stage of the abduction treatment preparatory to the application of the plaster spica. The shortening having been reduced by direct manual traction, the limbs are then abducted to the normal limit, as demonstrated on the sound side. The limb on the injured side is completely abducted, extended, and slightly rotated outward. The surgeon supports the trochanter and notes the exact correspondence of landmarks on the two sides of the level pelvis. The Hawley table is a convenient support, but the traction apparatus is not used.

The abduction method is a treatment for fracture of the neck of the femur and these remarks apply, therefore, to what may be termed operable cases. Experience has proved, however, that a treatment that relieves pain, that permits change of posture, and thus prevents bed sores, and hypostatic congestion, has a far wider range of practicability than any method that confines the patient to the back, and that it is often more conservative even than non-treatment. Furthermore, that advanced age does not prevent repair.

In the application of the abduction treatment, no distinction is made between the intra- and extracapsular fractures, except that the result in the former instance is considered absolutely dependent upon favorable opportunity and therefore on the quality of the treatment. Deformity that must interfere with function is always corrected and it has been demonstrated that the so-called impactions in most instances are not stable in the sense of assuring repair, but that the fractured surfaces are displaced. Consequently that the correction of deformity which is essential to normal function is also essential to union.

The abduction treatment, because it is in accord with surgical principles, is applied with a definite purpose, the accomplishment of which may be demonstrated by x-ray examination at the time of the operation and at intervals thereafter. Furthermore, in contrast with all other methods, it is completely under the control of the one who applies it. Finally, it is supplemented by a protective and reconstructive treatment during a period of from six months to a year, to assure as far as may be the restoration of function.

As practical evidence in support of the propositions that have been advanced, two reports may be cited: that of the British Committee on Fractures in which the satisfactory results were 23% of the cases actually treated and that of Campbell (*Annals of Surgery*, Nov., 1919), of a practically equal number of cases of the same quality and type, treated by the abduction method with 94% of favorable results, *i.e.*, bony union and good function. It is further stated that, "Quite a number of these walked perfectly"—a balance of 70% in favor of efficiency.

In the past, inefficiency, incompetence and neglect have been tolerated because of the belief that efficient treatment of the fracture was dangerous or impracticable or futile.

When, however, the self-evident proposition, that repair is dependent upon opportunity, is accepted, the only method that will assure demonstrable opportunity must become the basic routine of treatment, because the surgeon who selects and applies methods, manifestly inadequate to provide the first essential of success may then be held responsible for failure.

REFERENCES.

[1]Henderson: Surg., Gyn. and Obstet., January, 1920.

SPINA BIFIDA: OPERABILITY AND TIME FOR SURGICAL INTERVENTION.*

By Torr Wagner Harmer, M.D., Boston.

Spina bifida is, as you know, a developmental defect, a defect in closure of the spinal column. The defect may be anterior or posterior. I shall speak only of the posterior types. In these, the spinous process and parts of the laminae of one or more vertebrae may be missing. There may or may not be a protrusion of dura through this defect. When a protrusion exists, it may be pedunculated or rounded and sessile. Whether or not a protrusion exists, the bony defect may be covered with skin, skin and membrane, or entirely with membrane. Nerve elements may or may not be present in the sac, and when present they may or may not be adherent. Paralysis of varying extent according to the level of the defect and the nerve involvement may be present. There may be complete sensory and motor paralysis below the level of the lesion, including the bladder and rectum.

This series now includes 38 cases, personally operated, which I believe is an unusual experience. The earliest cases are now nearly five years old. There are eight meningocoeles, 26 myelomeningocoeles, 3 hydroencephalocoeles, and 1 encephalocoele. Twenty-seven were rounded and sessile, 8 rounded and pedunculated, and three flat and entirely covered with membrane. Twenty-two cases had ulcerated or leaking sacs.

Seventeen cases were discharged dead, twenty-one were discharged alive; a mortality of 44.7 per cent., which compares very favorably with other percentage figures which I have found. The causes of death were meningitis, continued loss of cerebro-spinal fluid, acute hydrocephalus, shock, and umbilical septicaemia. Therefore, deducting the case which died of umbilical septicaemia, the operative mortality is 42.1 per cent.

In June, 1917, I had the privilege of presenting a paper on this subject before the Massachusetts Medical Society. In this paper (Boston Medical and Surgical Journal, September 13, 1917) was presented an analysis of the cases to date, and my technique of operating. In this short talk I wish to consider only the operability of cases and time for surgical intervention. Protrusion through the bony defect depends on a disturbance in the relation between secretion and absorption of the cerebrospinal fluid. The bulging sac acts then as a safety valve. In cases in which the sac is an inadequate safety valve, hydrocephalus will ensue. Likewise, if the sac be removed before an equilibrium between secretion and absorption of cerebro-spinal fluid has been established, an acute hydrocephalus will occur. Death without operation may occur from two causes,—from compression, or from meningitis in those cases in which the membraneous coverings of the sacs become excoriated and infected.

Now for the various types of cases. First, those with sacs entirely covered with skin, without paralysis. In these, obviously operation may be deferred until it is evident that no hydrocephalus is developing. In such cases in which the sac is increasing in size, it is obviously better judgment to wait until the sac has apparently reached its maximum, *i.e.*, until several weeks have elapsed with no change in the size of the sac. In the pedunculated variety entirely covered with skin, operation may be deferred for a longer time, because there is little likelihood of the inclusion of nerve elements. In the sessile type, there may be inclusion of nerve elements and operation should not be deferred longer than is necessary to determine the unlikelihood of post-operative hydrocephalus.

Second, those cases with rounded sacs covered partially or entirely with membrane. In cases of this kind it is obviously wisest to operate as soon as possible on account of the great danger of excoriation and infection of the sac. Even if this has occurred, operation may be successfully performed, but the risk of postoperative meningitis is obviously greatly increased. In cases of this type with paralysis, I believe that operation should be performed at once, *i.e.*, as soon as the little patient can be transported to surroundings where surgical interference can be safely made,—within three, four or five hours after birth. In such cases, granulation at the summit of the sac is prone to occur and the nerves very soon become inextricably involved in this granulation. Operation should be undertaken before this calamity has occurred. Otherwise operation cannot cure the paralysis. In cases of this type (sacs partially or entirely covered with membrane) in which there is evidence of hydrocephalus, immediate operation to forestall an infection of the sac may be followed by rapid development of hydrocephalus. Under such circumstances, with scrupulous care of the sac to prevent infection, a delay of a few days is justifiable. If the sac is increasing in size and operation is performed, hydrocephalus will surely ensue. If the sac does not increase in size and the head does not change, operation is justifiable on the grounds that an equilibrium between secretion and absorption of cerebro-spinal fluid has been established. I have operated on cases of this kind and no increase in the hydrocephalus has occurred. Operation can certainly not be long delayed because the membrane will inevitably become infected.

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* Read before the Suffolk District Medical Society, November 17, 1920.

Third, those cases without protrusion but with the defect covered entirely by flattened membrane. If the defect is a wide one, if the membrane is excoriated, and if there is paralysis, I regard the case as inoperable. None of this external membranous covering can be used to close the dura, *i.e.*, infolded under mobilized skin flaps. Infection inevitably occurs. The external membrane must be entirely removed. In cases with wide defects, it is obvious that even by stripping the dura from the surfaces of the stumps of the laminae, sufficient dura cannot be obtained to close over the cord or cauda equina. Under such conditions leakage of cerebro-spinal fluid itself may cause death, or cerebro-spinal meningitis will develop. In cases of this type, therefore, in which the sacs are already excoriated and paralysis is present, operation is not justifiable. On the other hand, however, if the membrane is intact, if there is no paralysis and no indication of hydrocephalus, operation is hazardous because it may be impossible to mobilize a sufficient amount of dura to tightly close the sub-dural space. Operation, nevertheless, is justifiable because sufficient dura may be mobilized and because death from meningitis is inevitable without operation.

To recapitulate:

1. Rounded pedunculated sacs, entirely covered with skin, without paralysis—operation may be safely deferred for a long time, but it is better judgment to adopt the same criterion for operative interference as in the rounded sessile type.

2. Rounded sessile sacs, entirely covered with skin, without paralysis—operation should not be deferred longer than is necessary to determine that an equilibrium between secretion and absorption of cerebro-spinal fluid has been established, *i.e.*, not longer than several weeks after the sac has reached its maximum size.

3. Rounded sessile sacs, entirely covered with skin, with paralysis—operation at once in the hope of forestalling inextricable adhesion of nerve elements. Post-operative hydrocephalus may occur but if we wait for signs of hydrocephalus to appear, we will likely miss the opportunity to cure paralysis by operation. Non-adherent nerve elements in the sac may be successfully replaced within the spinal canal, but nerve elements involved in granulation tissue of the sac cannot be successfully extricated.

4. Rounded sessile sacs, entirely or partly covered with membrane, without paralysis. With scrupulous care of the sac, a delay of a few days is justifiable to demonstrate the unlikelihood of postoperative hydrocephalus. Delay beyond this means excoriation and infection of the sac and poorer operative prognosis.

5. Rounded sessile sacs partially or entirely covered with membrane, with paralysis—operation at once, in the hope of finding nerve elements which are not inextricably adherent to the sac. With the head obviously hydrocephalic, operation is not justifiable.

6. Defects covered entirely with flat membrane, when narrow and with or without paralysis—operation at once.

7. Sacs entirely covered with flat membrane, when wide and with paralysis—operation unjustifiable.

My hope in this short talk is to dispel a very general belief that operation should be postponed until the child is stronger. If I have made it evident in this talk that postponement in certain cases loses the opportunity for successful surgery, I have accomplished my purpose.

◆

The Cutter Lecture on Preventive Medicine and Hygiene.—The Cutter Lecture on Preventive Medicine and Hygiene was delivered by Professor Jules Bordet, Director of the Pasteur Institute at Brussels, on "Anaphylaxis," on Monday, Nov. 15, 1920, at the Harvard Medical School.

THE BOSTON
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THURSDAY, DECEMBER 30, 1920

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Boston Medical and Surgical Journal

126 Massachusetts Ave., Cor. Boylston St., Boston 17, Massachusetts

THE PRESENT DAY PLIGHT OF PETROGRAD PHYSICIANS.

The *British Medical Journal* for July 31, 1920, quoting the *Tidshrift for den Norske Laegeforening* of June 15, 1920, gives a gloomy picture of the desperate strait to which the practitioners of Petrograd are reduced.

During the recent typhus epidemic in Petrograd, the mortality among physicians attending these cases was between 45% and 50%, while the mortality for the whole city was between 8% and 9%.

All physicians have been nationalized and are government employees, not being allowed to engage in private practice. The official monthly wage is between 5,000 and 6,000 rubles, plus a double food ration, which includes one-half pound of bread a day. The physicians have one public meal a day, which consists of soup and horse meat. On this diet they have carried out their onerous duties, which have increased greatly by reason of epidemics of cholera and dysentery in the summer and smallpox and typhus in the winter.

Of the 4,000 physicians resident before the war only 800 are left, most of the rest have died of starvation, over-work, or have been victims of the various epidemics. Their work is usually done on foot, the trams being so infested with lice that their use entails great danger of contracting typhus. The cost of a horse and vehicle is 2,000 rubles an hour, and the few motor cars left cannot be used by physicians.

VITAMINES.

The question was asked by a reader of the editorial on vitamines in the issue of Oct. 28, 1920: "How do the Eskimos get vitamines? We requested an answer of Prof. E. V. McCollum of Johns Hopkins, and have received the following reply:

Mr. Editor:

Replying to your letter regarding the Eskimo: The Eskimo had a pretty satisfactory diet in his primitive state, because he ate not only muscle meats but likewise glandular organs which supplied the various unidentified dietary essentials; blood which supplied the necessary sodium chloride, which would not have been sufficiently abundant in muscle tissue; bone marrow, which likewise supplemented the unidentified dietary factors, of which he got a portion in the glandular organs; the soft ends of bones, which pieced out the calcium supply. He was able to derive a large supply of his energy supply from fat, and with this selection he succeeded admirably with his nutrition. This is the type of selection which carnivorous animals usually make and on which they develop well if their hygienic conditions are satisfactory.

Yours sincerely,
E. V. McCollum.

MALPRACTICE DEFENSE.

Last June the Maine Medical Association adopted an act defending its members against suits for malpractice, thus becoming the twenty-seventh state medical society in the Union having such defense and at the same time paying a compliment to the medical society of its sister state, Massachusetts, by adopting the measure that, with one or two minor additions, has been in successful operation in this Commonwealth for the past twelve years.

In general terms, the act of the Massachusetts Medical Society, which, by the way, was drawn by the late E. B. Harvey and put into operation during the presidency of G. W. Gay, provides for defense of any active member in good standing, in any court in the Commonwealth when he is sued for malpractice, without expense to him, provided he agrees to put his case unreservedly in charge of the attorney supplied by the Society and also agrees not to settle the case without the Society's consent. The president and secretary are a board to determine what cases shall be accepted for defense. Should a case in court be lost, the Society furnishes nothing toward the payment of any damages that may be awarded. The last provision, which is general among malpractice acts of the several state medical societies, deters many of the prominent men in the profession, those with large practices and large incomes, from trusting to the medical society for defence; as a rule, these fellows carry commercial insurance, seldom asking the Society for its help. Therefore most of the actual defense is given to men of minor prominence and those who have no insurance.

It may be stated without fear of contradiction that the act has given general satisfaction and has afforded protection to a large number of fellows since 1908. In only two cases during that time have adverse verdicts been found and both of these have been appealed on points of law. The expense to the Society of defending its members has not been excessive—from five to six hundred dollars a year. The experience in Massachusetts has been the same as in a majority of states where a malpractice act has been in operation. Dr. J. A. Spaulding of Portland, who was responsible for the passage of the Maine act, carried on an extensive correspondence with the other states and summarized the results in the *Journal of the Maine Medical Association* for April, 1920. Malpractice suits are increasing in frequency as the years pass. The lawyers who hope to get a large share of any money extracted from a physician's pocket are even hungrier and more adroit in using the technicalities of the law for their own profit. The plaintiff plays the part of stool pigeon so far as receiving any considerable part of damages assessed. A suit may be instituted on the very flimsiest of pretexts and it must be defended.

Not to pay damages that may be awarded is an essential principle for any state medical society to incorporate in its act for defense, for in this way is removed the incentive to bring suit. Whenever application papers have been filed with the Society following the receipt by a fellow of a threatening lawyer's letter, the matter has been dropped by the plaintiff's attorney in nine out of ten instances There is no money to be obtained from the medical society. On the other hand, there might be, and generally is, a prospect of a fee from an insurance company, in the way of settlement if not in satisfaction of a verdict for the plaintiff. In this manner commercial insurance fosters the bringing of suits. There have been instances where a physician has been careless, like certain members of all professions, and has failed to give his patient reasonable and customary treatment. In such cases he has been advised to make a settlement with the objecting patient rather than fight a suit, on the ground that it is proper for him to pay for his inattention. This happening is not of common occurrence.

Among the moot points that have arisen during the operation of the act is the question whether there can be conceived any arrangement by which fellows may obtain both defense by their society and, in addition, reimbursement in the event of damages being awarded. The California Medical Society has a plan called "inter-indemnifying." Members who desire to participate pay a preliminary assessment of thirty dollars each. That society gives the following advice to its members: "Considering the very slight cost, members should not waste any effort to determine whether defense by the society without indemnity or defence by the society with indemnity or defense by an insurance company is superior, but should impartially and promptly secure all protection available." The distinction is drawn between indemnity and insurance and the claim is made that California does not insure. Another question often asked is: "How can a private attorney retained by a fellow to protect his interests, be assisted by the attorney for the society?" Thus far no procedure has been devised whereby the Society's attorney may act for a fellow through his attorney or through the lawyer for an insurance company. In order to defend successfully it seems to be necessary for the Society and its agent to have entire charge of all the details; a division of responsibility is to be avoided, according to legal advice.

Under the law, the physician cannot be relieved of the accountability which attaches to the practice of his art, no matter if he was doing an act of charity, supplying for a brother practitioner or was a member of a public hospital staff, where much of the actual treatment of the patients was done by assistants. The responsibility for giving a patient the care that is generally regarded as reaching the average of efficiency in a given community is his and cannot be transferred to anyone. Therefore, it is incumbent on him to control the acts of his assistants. At the present time it is a question whether a surgeon can afford to be a member of a public hospital staff unless he can give the time necessary to supervise the detail work of his assistants, for there are few operations that may not be made the basis of a suit, and public hospitals cannot be sued.

Another question which arises is, "What are the duties of a relatively small group of Fellows who are qualified to act as experts in court, toward suits that are defended by insurance companies?" In the experience of the Massachusetts Medical Society, these experts have given freely of their time and knowledge without remuneration, in testifying in suits against their brethren when defended by the Society. Their service is to be compared with that rendered in a professional way to the members of their own profession and to the families of members. Should they give of their time and experience without pay to the defense of suits cared for by insurance companies? The companies complain of the cost of expert testimony; they say they are doing their best to protect the profession, consequently the experts should furnish their policy holders the same service they give the fellows of the Society. To this it is answered that the companies are insuring in order to make money while the Society has no such object in view. Were all the members of the Society equally available as experts, the solution of the difficulty would be plainer. Today most of the experts pay for commercial insurance for themselves and look to the insurance companies for defense. They are the ones who most often are singled out as victims by the acquisitive lawyer, for do they not possess property, and high standing, which is capable of being transposed into terms of money?

Lack of interest in malpractice defence, except among those who have suffered, is too prevalent in the medical profession. The thoughtful physician might well devote a portion of his leisure moments to consideration of the problems that confront us; to assist in determining the best methods of protecting the profession of medicine from unjust attacks.

A CORRECTION.

The writer of the editorial on Maternity Aid in the Journal of August 5, 1920, wishes to state that eight deaths should have been added to the list of out-patients who died as a result of pregnancy and labor during a fifteen-year period. This would make a mortality rate of 14, instead of 11, per 10,000 births as compared with a rate for the State of 38 in 1901 and 84 in 1918. The error was made through misinformation.

MEDICAL NOTES.

BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending December 18, 1920, the number of deaths reported was 208 against 210 last year, with a rate of 14.50 against 13.75 last year. There were 35 deaths under one year of age against 32 last year.

The number of cases of principal reportable diseases were: Diphtheria, 72; scarlet fever, 38; measles, 34; whooping cough, 31; typhoid fever, 1; tuberculosis, 44.

Included in the above were the following cases of non-residents: Diphtheria, 12; scarlet fever, 8; measles, 1; tuberculosis, 5.

Total deaths from these diseases were: Diphtheria, 7; whooping cough, 3; tuberculosis, 13.

Included in the above were the following cases of non-residents: Diphtheria, 3; tuberculosis, 1.

Graduating Exercises at the Peter Bent Brigham Hospital.—The graduating exercises of the School for Nursing of the Peter Bent Brigham Hospital were held at the hospital on the evening of December 3. The exercises were followed by a reception.

Correspondence.

MATERNITY AID: A REJOINDER.

Mr. Editor:—

In the Journal of December 9 was published a brief submitted to the Senate Committee on Ways and Means before the adjournment of the Legislature last Spring. Without intending to enter into any discussion regarding the opinions expressed in the brief, I wish to call attention to certain misstatements of fact.

The article states that "It is safe to say that not 50% of the physicians have an intelligent knowledge of these bills, and the reason is obvious because these bills have not generally been put before them for consideration."

In the Journal of January 29, 1920, pp. 121-123, is an editorial article signed by Dr. Alfred Worcester, President of the Massachusetts Medical Society, dealing with maternity benefits and printing the Young Bill in full. In the same issue, page 132, is a brief explanation of the Young Bill and the attitude of the Joint Committee at the opening of the legislative session.

On March 11, 1920, pp. 285, 286, in a report by the Joint Committee, a full explanation of the Spencer Bill, the Carey Bill, and the Young Bill is given. In the same issue, the Journal commented editorially (pp. 279, 280) on maternity benefits.

On May 6, 1920, pp. 491, 492, a report was made by the Joint Committee on various matters before the Legislature, including maternity aid, and giving the draft of a new bill, reported on April 23, by the Committees on Public Health and Social Welfare, sitting jointly.

In the issue of May 13, 1920, p. 509, the Journal made editorial comment on this report, stating that "if we hope to influence legislation we must inform ourselves more fully and diffuse our views more widely."

On June 24, 1920, p. 664, after the adjournment of the Legislature, the Journal appealed editorially for full and free discussion of maternity aid.

The Journal is sent to every member of the Massachusetts Medical Society who has paid his dues promptly.

The brief further says: "Before the Joint Committee, at previous hearings . . . it was said that the Massachusetts Medical Society and its 3,800 physicians were in favor of these bills. This is not so. The Legislative Committee of the Massachusetts Medical Society, we are told, endorsed these bills. . . . Therefore, when a speaker before the Joint Committee said he represented the 3,800 members of the Massachusetts Medical Society, all in favor of the bills, that statement could not have been correct."

As the representative of the Joint Committee on State and National Legislation representing the Massachusetts Medical Society and the Massachusetts Homeopathic Medical Society, and pursuing the instructions of that Committee, I stated before the Legislative Committees on Public Health and Social Welfare, sitting jointly, that, owing to wide diversity of opinion among physicians, we did not take any stand on the general social question of the advisability of maternity aid, but that if the Legislature determined to enact any of the proposed measures, the so-called Spencer Bill and the so-called Young Bill then being measures under serious consideration, the Committee strongly preferred the Young Bill.

The Joint Committee endeavors to present information to the members of the Society, to call forth discussion and, so far as possible, to represent the views of the Society.

James S. Stone, *Secretary,*
Committee on State and National Legislation.

MATERNITY AID.

Boston, December 18, 1920.

Mr. Editor:—

At the regular monthly meeting of the South Boston Medical Society it was voted that our Society endorse the views of Dr. A. H. Quessey regarding The Maternity Bill published in your last week's Journal.

Respectfully yours,
F. G. Miniter, *Secretary.*

MATERNITY AID.

Shelburne Falls, Mass., December 13, 1920.

Mr. Editor:—

In your issue of December 9 appeared an article on Maternity Aid by A. H. Quessey, M.D.

I wish to voice my absolute approval of the views therein expressed and to state that most, if not all, of my medical associates in this section have the same feeling about the proposed legislation; also to suggest, if I may, that it might be wise for the editors of the Journal to first find out the attitude of the rank and file of the profession in this state before editorially strenuously advocating any proposed new medical legislation. At least, this course would make for a more united profession and more hearty backing for the Journal.

Very truly,
Charles L. Upton, M.D.

SOCIETY NOTICE.

Essex North District Medical Society.—A semiannual meeting of this Society will be held at Unity Hall, Main street, opposite City Hall Park, Haverhill, on Wednesday, January 5, 1921, at noon.

PROGRAM.

C. K. Drinker, M.D., of Boston, Associate Professor of Applied Physiology at Harvard University Medical School, "Opportunities in Industrial Medicine" (40 minutes).

F. H. Dunbar, M.D., of Boston, Bacteriologist, Instructor in Bacteriology and Pathology, Tufts College Medical School, "The Practitioner and the Laboratory" (40 minutes).

Alfred Worcester, M.D., of Waltham, President of the Massachusetts Medical Society, will be present as our guest, and will address the Society.

Upon invitation of the State Society, the next Annual Session of the American Medical Association will be held in Boston, June 6 to 10, 1921.

D. D. Murphy, M.D., *President,*
J. Forrest Burnham, M.D., *Secretary.*

NOTICE.

Massachusetts General Hospital.—Program of clinical meetings of the staff to be held in the Lower Out-Patient Amphitheatre, at 8 p.m., during the year 1921:

Jan. 10. Mediastinitis, Dr. Paul White and Dr. Ross Golden.
Jan. 24. Neurological Surgery, Dr. W. J. Mixter and Dr. G. Clymer.
Feb. 14. Respiration, Dr. F. B. Talbot, and Dr. J. H. Means.
Feb. 28. Blood, Dr. G. R. Minot.
Mar. 14. Cardiac, Dr. Paul White.
Mar. 28. Surgical—Carcinoma.
April 11. Neurological subject.
April 25. The Adrenals, Dr. J. C. Aub.
May 9. X-ray subject.

The above program is tentative and may be subject to change both in subject and speaker. The usual notice for each meeting will be sent a few days in advance.

F. A. Washburn, M.D.,
Resident Physician.

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THE FELLOWS LISTED ACCORDING TO THEIR SITUATION IN THE VARIOUS CITIES, TOWNS AND POST OFFICES OF THE STATE

CORRECTED TO JULY 31, 1920

Prepared by the Librarian

The Massachusetts Medical Society
8 The Fenway
Boston, Massachusetts

LOCAL DIRECTORY

THE FELLOWS LISTED ACCORDING TO THEIR SITUATION IN THE VARIOUS CITIES, TOWNS AND POST OFFICES OF THE COMMONWEALTH.

NOTE.—Names of District Societies are printed in lower-case Roman. Names of cities are printed in capitals. Names of towns are printed in small capitals. Names of villages and post offices are printed in lower case italics.

Abington (Plymouth).
(See also: North Abington.)
Hutchinson, W. P.
Stevens, W. R.

Acton (Middlesex North).
(See also: West Acton).

Acushnet (Bristol North).

Adams (Berkshire).
Boom, A. K.
Crowley, J. F.
Holmes, H. B.
Pascoe, W. W.

Agawam (Hampden).
(See also: Feeding Hills.)

Alford (Berkshire).

Allerton (Hull).
Sturgis, W. H. W.

Allston (*Brighton*) (BOSTON).
Casey, J. F.
Dawson, R. P.
Felch, G. A.
Giddings, H. G.
Grant, W. H.
Gwinnell, A. L.
Haslam, F. A.
McKeen, S. F.
Meserve, E. A.
Moran, G. L.
Packard, Fabyan
Pillsbury, A. R.
Riley, C. A.
Rogers, E. A.
Tinkham, O. G.
Turnbull, J. H.
Wormelle, C. B.

Amesbury (Essex North).
Biron, J. F. R.
Mudge, O. P.
Mullen, P. J.
Murphy, D. D.
†Rand, J. W.
Savignac, A. N.
Warren, C. F.

Amherst (Hampshire).
(See also: Cushman, and North Amherst.)
Haskell, N. C.
Rawson, G. W.
Rockwell, H. G.
Whitman, L. O.

Annisquam (GLOUCESTER).
Shields, E. E.

Andover (Essex North).
Abbott, O. E.
Conroy, E. C.
Daly, J. J.
Fuller, J. R.

Andover (continued).
Lane, E. D.
Look, P. J.
Walker, W. D.

Arlington (Middlesex South).
(See also: Arlington Heights.)
Atwood, C. F.
Buckley, D. J.
Dennett, C. A.
Easter, E. F.
Hodgdon, F. W., Jr.
Keegan, C. A.
Lawley, B. I.
Pratt, Ezekiel.
Sanger, G. E.
Stickney, E. P.
Tolman, Julia
Walsh, C. J.
Webb, H. R.
Young, R. D.

Arlington Heights (Arlington).
Ring, A. H.

Ashburnham (Worcester North).
Bates, C. A.
Fosgate, E. G.

Ashby (Worcester North).
Pope, F. F.

Ashfield (Franklin)

Ashland (Middlesex South).
Morse, R. S.

Assonet (Freetown).
Briggs, C. A.

Athol (Worcester North).
Bassow, G. J.
Cuddy, J. F.
Dodge, G. F.
Gleason, B. W.
†Perry, G. L.

Atlantic (QUINCY).
Bartlett, F. A.
Bruce, D. A.
Drew, M. E.
Sweeney, M. T.

ATTLEBOROUGH (Bristol North).
Battershall, Jesse W.
†Battershall, Joseph W.
Battershall, M. H. W.
Bolduc, A. G.
Clarke, J. W.
Conro, A. C.
Hewitt, W. O.
Holden, C. S.
Kent, R. P.
Mackie, L. V. G.
MacKnight, A. S.
Milot, W. F.

ATTLEBOROUGH (continued).
Murphy, F. V.
Reese, J. A.
Rounseville, W. E.
Vaughan, H. G.

Auburn (Worcester).

Auburndale (NEWTON).
Godfrey, H. W.
Haskell, H. H.
Hutchinson, C. P.
Keever, H. F.
†Porter, F. E.

Avon (Plymouth).

Ayer (Worcester North).
Hopkins, B. H.
Priest, H. B.

Baldwinsville (Templeton).
Arey, H. C.
Arey, J. M.
Page, H. W.
Robie, W. F.
Stick, H. L.

Barnstable (Barnstable).
(See also: Cotuit, Hyannis, Marston's Mills, Osterville.)
Millikin, C. W.

Barre (Worcester).
Bates, W. S.
Brown, G. A.

Becket (Berkshire).

Bedford (Middlesex North).
Whiton, R. K.

Belchertown (Hampshire).

Bellingham (Norfolk).

Belmont (Middlesex South).
(See also: Waverley.)
†Dow, J. A.
Hanson, W. C.
Hoitt, E. G.
Leavitt, F. C.
Rogers, M. H.

Berlin (Worcester).

Bernardston (Franklin).
Croft, B. P
Pierce, W. H.

BEVERLY (Essex South).
(See also: Beverly Farms.)
Bogan, I. K.
Dexter, Franklin
Hayes, W. F.
Hill, G. J.
Johnson, P. P.
Lawlor, J. F.

BEVERLY (continued).
Kline, G. M.
Kelley, H. J.
Murphy, D. F.
Odeneal, T. H.
Phillips, C. H.
Sears, H. E.
Shatswell, J. A.
Stanley, F. G.
Stickney, G. A.
Stickney, R. C.
†Stickney, W. G.
Stone, R. E.
Swan, L. C.
Webster, F. A.

Beverly Farms **(BEVERLY).**
Warren, H. E.

BILLERICA (Middlesex North).
(See also: North Billerica.)
Alley, E. J.
Buck, M. A.
Stearns, A. W.

Blackinton **(WILLIAMSTOWN).**
Galvin, William

BLACKSTONE (Worcester).
Roche, T. F.

BLANFORD (Hampden).

BOLTON (Worcester).

BOSTON (Suffolk).
(See also: East Boston, South Boston, Allston, Brighton, Charlestown, Dorchester, Forest Hills, Hyde Park, Jamaica Plain, Mattapan, Roslindale, Roxbury, West Roxbury.)
Achorn, R. C.
Adams, L. D.
Alcazar, Izak
Allen, A. W.
Allen, C. R.
Allen, Freeman
Allen, G. W.
Amadon, A. F.
Ames, J. L.
Andrews, H. V.
Appleton, William
Arkin, Louis
Atwood, B. L.
Austin, A. E.
Ayer, J. B.
Ayer, S. H.
Babcock, H. L.
Bachman, G. W.
Badger, G. S. C.
Baker, D. V.
Baker, H. W.
Balboni, G. M.
Bardwell, F. A.
Barney, J. D.
Barone, Joseph
Barrell, C. S.
Barron, M. E.
Barstow, A. T.
Bartol, J. W.
Bean, C. P.
Bearse, Carl
Beebe, T. C.
Berry, C. F.
Bigelow, W. S.
Binney, Horace
Bisbee, E. S
Blake, Gerald
Blake, J. B.
†Blodgett, A. N.
Blodgett, J. H.
†Boardman, W. E.
Boardman, W. P.
Boardman, W. S.

BOSTON (continued).
Bock, A. V.
Bossidy, J. C.
Bottomley, J. T.
Bowditch, Harold
Bowditch, H. I.
Bowditch, V. Y.
Bowen, J. T.
Bowman, F. R.
Brackett, E. G.
Bradford, E. H.
Brady, J. F.
Brant, Austin
Breed, W. B.
Bremer, J. L.
Breslin, J. G.
Brett, A. L.
Brewster, G. W. W.
Brickley, W. J.
Briggs, F. M.
Briggs, J. E.
Briggs, L. V.
Brigham, F. G.
Brindisi, Rocco
Bristol, DeL. J.
Brooks, E. M.
Brooks, W. A.
Brough, D. D.
Brown, L. T.
Brown, Percy
Brown, W. J.
Browne, W. E.
Bruce, J. B.
Bryant, A. G.
Bryant, John
Buck, H. M.
Bullard, W. N.
Bunker, S. M.
Burnham, E. A.
Burnett, F. L.
Burns, F. S.
†Bush, J. S. F.
Butler, A. E.
Butler, C. S.
Butler, P. F.
Cabot, Hugh
Cabot, R. C.
Caines, R. J. R.
Carroll, J. A.
Castleman, Philip
Champion, M. E.
Chandler, T. E.
Chase, H. M.
Cheever, A. W.
Cheever, David
Chenery, W. E.
Christian, H. A.
Chute, A. L.
Clap, E. W.
Clark, G. O.
Clark, J. P.
Clark-MacLeod, Emily
Cliff, L. A
Clifford, Randall
Cline, Samuel
Clute, H. M.
Clymer, George
Cobb, Farrar
Cobb, F. C.
Cobb, Stanley
Cochrane, R. C.
Codman, E. A.
Coffin, R A
Coffin, W. K.
Cogan, J. A.
Cohen, S. A.
Colburn, H. H.
Conant, W. M.
Coriat, I. H.
Cotton, F. J.
Coues, W. P.
Councilman, W. T.

BOSTON (continued).
Courtney, J. W.
Cowles, W. L.
Cox, A. C.
Cox, O. F.
Crabtree, H. H.
Cragin, G. A.
Crandon, L. R. G
Crane, Clarence
Crawford, F. X.
Crockett, E. A.
Crosbie, A. H.
Cummin, J. W.
Cummins, L. J.
Cunningham, A. R
Cunningham, J. H., Jr.
Curran, L. F.
Cushing, H. W.
Cutler, E. G.
Cutler, G. D.
Dadmun, E. J.
Daland, E. M.
Daly, W. J.
Daniels, E. A.
Davenport, F. H.
Davis, Lincoln
Davis, M. F.
Day, H. F.
Delano, Samuel
Denig, B. A.
Denny, G. P.
DeNormandie, R. L.
Derby, F. W.
Derby, G. S.
Dewing, L. A.
Di Mento, V. J.
Dixon, L. S.
Dixon, R. B.
Dodge, A. M.
Dodge, W. W.
Donoghue, F. D.
Dorcey, J. E.
Dowling, J. J.
Drury, D. W.
Duckering, F. W.
Dunn, C. H.
Dunn, Wm. Ambrose
Du Valley, Nicholas
Dwight, E. W.
Dwyer, W. J.
Eames, G. F.
Earle, G. H.
Easton, E. T.
Eaton, H. B.
Edwards, W. L.
Ehrlich, Henry
Elliot, J. W.
Elliott, R. D.
Emerson, F. L.
Emerson, P. W.
Emerson, W. R. P.
English, M. J.
Erb, T. C.
Eustis, R. S.
Evans, Albert
Everett, E. E.
Fabyan, Marshal
Fair, R. P.
Farlow, J. W.
Faulkner, W. E.
Felch, C. I.
Felch, L. P.
Feldman, Aaron
Feldman, Louis
Finck, H. P.
Finkelstein, Harry
Fitz, G. W.
Fitz, Reginald
Fitzgerald, J. B.
Flagg, Elisha
Fleury, O. T.

BOSTON (continued).
Floyd, Cleaveland
Foley, J. A.
Frankel, D. I.
Fraser, A. McK.
Fraser, Somers
Fremont Smith, Frank
Friedman, Benjamin
Friedman, Eli
Freedman, H. F.
Friedman, Nathan
Frost, H. M.
Frothingham, Channing, Jr.
Galloupe, C. W.
Gallupe, H. Q.
Gannett, W. W.
Garland, G. M.
Garland, Joseph
Garrick, N. H.
George, A. W.
Germain, H. H.
Gilpatrick, R. H.
Goddu, L. A. O.
Goethals, T. R.
Golden, Lazarus
Goldthwait, J. E.
Goodale, J. L.
Goodall, H. W.
Goodwin, H. M.
Gordon, J. R.
Granger, F. B.
Grant, J. F.
Graves, W. P.
Gray, Horace
Gray, H. B.
Green, C. M.
Green, Hyman
†Green, J. O.
Green, M. C.
Green, R. M.
Greene, D. C., Jr.
Greene, E. M.
Greenough, R. B.
Grogan, M. V.
Gunter, F. C.
Gustafson, Paul
Hall, G. W.
Hall, W. D.
Hamilton, A. J. A.
Hamilton, A. L.
Hamilton, F. A.
Harding, Edward
Harding, G. F.
Hare, C. H.
Harmer, T. W.
Harrison, C. W.
Harrison, Henry
Hartung, H. H.
Hartwell, H. F.
Harvey, W. W.
Haskins, F. E.
Hawes, J. B., 2nd
Hebbard, E. C.
Heffernan, D. A.
Hegerty, J. G.
Henderson, F. F.
Hepburn, J. J.
†Hersey, F. C.
Hewes, H. F.
Higgins, F. A.
Hill, G. S.
Hill, L. W.
Hill, T. C.
Hipkiss, George
Hitchcock, Edward
Hodgkins, E. M.
†Hogner, R. P. F.
Hollings, Byam
Hooper, G. H.
Hornor, A. A.
Horr, A. W.
Howard, A. G.

BOSTON (continued).
Howard, C. T.
Howard, H. H.
Howe, O. T.
Howe, W. C.
Howland, J. B.
Hubbard, Eliot, Jr.
Hubbard, J. C.
Hunt, D. L.
Huntington, J. L.
Hurley, J. J.
Hutchins, H. T.
Hyde, H. V.
Hyman, A. S.
Irving, F. C.
Irving, H. W.
Jack, E. E.
Jack, F. L.
Jackson, Henry
Janney, J. C.
Jantzen, F. T.
Jelly, A. C.
Johnson, F. W.
Jones, D. F.
Jones, M. S.
Joslin, E. P.
Katsainos, G. M.
Keenan, G. F.
Kelley, E. R.
Kellogg, E. B.
Kellogg, F. L.
Kellogg, F. S.
Kennedy, A. G.
Kepler, C. O.
Kerr, I. D.
Kilburn, H. W.
Kimpton, A. R.
Kleinert, M. N.
Konrad, F. C. W.
Ladd, Maynard
Ladd, W. E.
Lahey, F. H.
Lane, C. G.
Larrabee, R. C.
†Lawrence, R. M.
Lee, H. J.
Lee, W. T.
Legg, A. T.
Leland, G. A.
L'Esperance, O. R. T.
Levins, N. N.
Lindquist, C. A.
Little, J. M.
Lloyd, H. D.
Locke, E. A.
Loder, H. B.
Lord, F. T.
Lorimer, Felix
Lothrop, H. A.
Lougee, J. L.
Lovett, R. W.
Lowell, F. L.
Luce, LeR. A.
Lund, F. B.
Lurie, M. H.
Lyman, Henry
MacAusland, A. R.
MacAusland, W. R.
MacCallum, W. P.
McClure, C. W.
McDonald, S. J.
McGann, P. P.
McGuire, L. W.
McIntyre, G. F.
MacKnight, W. F.
MacLennan, A. D.
MacPherson, D. J.
Madden, W. D.
Magrath, G. B.
Mahoney, D. F.
Mahoney, J. L.
Marble, H. C.

BOSTON (continued).
Marcy, H. O.
Margeson, R. D.
Marshall, H. W.
Mason, N. R.
Mead, L. G.
Meaker, S. R.
Means, J. H.
Medalia, L. S.
Meigs, J. V.
Melkonian, E. A.
Mendelsohn, Louis
Merrill, A. S.
Miller, G. F.
Miller, R. H.
Milward, F. W., Jr.
Minot, G. R.
Minot, J. J.
Mixter, C. G.
Mixter, S. J.
Mixter, W. J.
Monks, G. H.
Moore, G. C.
Moore, J. H.
Morgan, C. R.
Morgan, John
Morong, A. B.
Morrison, L. B.
Morrison, W. R.
Morse, G. W.
Morse, J. L.
Mosher, H. P.
Mulhern, J. P.
Munro, Donald
Myers, Edmund
Myers, S. W.
Mysel, Philip
Nash, F. J.
Newell, F. S.
Newton, W. C.
†Nichols, A. H.
Nichols, E. H.
Nolen, W. F.
Nowell, H. W.
Nute, A. J.
Ober, F. R.
O'Brien, F. W.
O'Brien, T. J.
O'Hare, J. P.
Oliver, E. L.
O'Neil, R. F.
Ormsby, E. B.
Osgood, H. A.
Osgood, R. B.
O'Sullivan, Anna
Otis, E. O.
Otis, W. J.
Ott, G. J.
Overlander, C. L.
Packard, A. E.
Packard, Horace
Page, A. K.
Page, C. G.
Paine, A. K.
Palfrey, F. W.
Palmer, S. E.
Papas, P. N.
Papen, G. W.
Parker, W. S.
Parkhurst, A. E.
Paul, L. G.
Paul, W. E.
Pavlo, S. G.
Payne, J. H.
Pearl, S. M.
Penhallow, D. P.
Perry, H. J.
Pfeiffer, Albert
Phaneuf, L. E.
Phelps, J. S.
Phipps, Cadis

BOSTON (continued)
Pierce, G. B.
Pike, W. C.
Piper, Frank
Place, E. H.
Poirier, G. H.
Pollock, H. M.
Pond, B. W.
†Pope, E. F.
Porter, C. A.
Post, Abner
Powers, G. H.
Pratt, E. A.
Pratt, J. H.
Preble, W. E.
Prince, Morton
Putnam, J. J.
Quackenboss, Alexander
Quest, J. F.
Rabe, E. R. E.
Reardon, T. J.
Redden, W. R.
Reed, Carlisle
Reeves, Marcellus
Reggio, A. W.
Reid, W. D.
Reynolds, Edward
Rice, W. H.
Richards, C. G.
Richards, T. K.
Richardson, A. G.
Richardson, E. P.
Richardson, F. L.
Richardson, Oscar
Richardson, W. L.
Riley, Augustus
Riley, E. A.
Robbins, Chandler
Robbins, E. D.
Robbins, W. B.
Robey, W. H., Jr.
Rock, J. C.
Rockwell, L. H.
Rogers, A. E.
Rolfe, W. A.
Rosen, D. W.
Rosen, Edward
Rothblatt, H. L.
Rudman, B. W.
Ruggles, R. H.
Rushmore, Stephen
Ryder, B. McW.
Sabine, J. D. K.
Sadler, R. A.
Saltz, S. M.
Sanborn, G. P.
Sargent, A. F.
Sargent, G. A.
Sawyer, E. J.
Sawyer, E. K.
Scannell, D. D.
Schirmer, J. W.
Scott, N. McL.
Scudder, C. L.
Sears, G. G.
Sears, H. F.
Settle, H. E.
Seymour, Malcolm
Shadman, A. J.
Shapira, A. A.
Shapira, V. I.
Shattuck, F. C.
Shattuck, G. B.
Shattuck, G. C.
Shaw, Albert J.
Shaw, Arthur J.
Sheldon, R. F.
Sheppard, P. A. E.
Shortwell, J. H.
Simmons, C. C.
Sisson, Mitchell

BOSTON (continued).
Sisson, W. R.
Skirball, J. J.
Slack, F. H.
Smith, Conrad
Smith, C. M.
Smith, E. W.
Smith, G. C.
Smith, G. G.
Smith, H. H.
†Smith, M. A.
Smith, P. M.
Smith, R. M.
Smith, W. D.
Smith-Petersen, M. N.
Sobotky, Irving
Soutter, Robert
Sowles, H. K.
Spaulding, J. D.
Spear, L. M.
Spinney, F. I.
Spooner, L. H.
Sprague, F. P.
Sprague, R. B.
Stacey, C. F.
Stack, J. J.
Standish, Myles
†Stedman, George
Steffen, E. E.
Stone, E. G.
Stone, J. S.
Storer, Malcolm
Streeter, E. C.
Strong, R. P.
Strongman, B. T.
Sullivan, C. B.
Sullivan, R. F.
Sumner, P. S.
Supple, E. A.
Swain, H. T.
Swift, E. H.
Swift, J. B., Jr.
Swift, W. B.
Talbot, F. B.
Taylor, E. W.
Temple, W. F.
Temple, W. F., Jr.
Tenney, Benjamin
Tenney, J. A.
Thomas, J. J.
Thompson, C. O.
Thompson, P. H.
Thorndike, Augustus
Thorndike, Paul
Thorndike, T. W.
Thorndike, W. T. S.
Thornton, J. B.
Tilton, W. N.
Tingley, L. P.
Titus, R. S.
Tobey, G. L., Jr.
Tobey, H. G.
Torbert, J. R
Towle, H. P.
Townsend, C. W.
Trayes, W. H.
Troupin, A. S.
†Trull, W. B.
Twombley, E. L.
Tyrode, M. P. O. V.
Ullian, E. J.
Verhoeff, F. H.
Vickery, E. A.
Victor, A. C.
Vincent, Beth
Vose, R. H.
Wadsworth, R. G.
Walker, D. H
Walker, E. F. W
Walker, I. J.
Walsh, E. F.

BOSTON (continued).
†Walton, G. L.
Wardwell, J. K.
Warren, John
Warren, J. Collins
Washburn, F. A.
Washburn, G. H.
Waterman, G. H.
Watson, F. S.
Wentworth, A. H.
Wetherell, B. D.
Wheet, H. R.
Whipple, F. H.
White, C. J.
White, F. W.
White, P. D.
Whitney, C. M.
Whitney, W. F.
Whittemore, Wyman
Wickham, T. W.
Wilcox, DeW. G.
Wilinsky, C. F.
Williams, D. L.
Williams, F. H.
Williams, Harold
Williams, H. C.
Williams, Hugh
Williams, J. T.
Wilson, E. W.
Winslow, Frederick
Winsor, A. P.
Wolbach, S. B.
Wood, N. K.
Wood, W. F.
Woodward, W. C.
Wright, J. H.
Wright, W. L.
Wylie-Cushman, E. R.
Wyman, E. T.
Young, E. L., Jr.
Young, E. B.
Young, E. W.

BOURNE (Barnstable).
(See also: Sagamore and Pocasset.)

BOXBOROUGH (Middlesex North).

BOXFORD (Essex North).

BOYLSTON (Worcester).

Bradford (HAVERHILL).
Anthony, F. W.
Atwood, G. M.
Brainerd, W. S.
George, L. H.
LeGro, L. B.
Littlefield, M. C.
O'Toole, J. L.

BRAINTREE (Norfolk South).
(See also: East and South Braintree).
Cook, J. H.
Gile, F. H., Jr.
Ripley, H. W.

BREWSTER (Barnstable).
Crocker, L. A.

BRIDGEWATER (Plymouth).
(See also: East Bridgewater and State Farm).
Carr, A. W.
Hunt, A. F.
Hunt, W. E.
†Pratt, Calvin
Warren, F. L.

Brighton (Middlesex South.)
(BOSTON)
(See also: Allston.)
Broderick, T. F.
Buckley, W. S.
Crosby, W. H.

Brighton (continued).
Doherty, F. J.
Larrabee, F. W.
Levine, S. A.
Moore, M. T. V.
O'Brien, E. J.
Rice, F. W.
Ripley, W. L.
Rowen, H. S.
Stanton, Joseph

BRIMFIELD (Hampden.)

BROCKTON (Plymouth).
(See also: Campello.)
Alfred, James
Bacon, J. E.
Barrett, M. F.
Beals, A. L.
Boucher, G. A.
Brady, J. F.
Brides, A. E.
Bridgwood, David
Buckley, G. A.
Budreski, A. F.
Burnett, F. H.
Butler, D. M.
Callahan, J. F.
Chase, H. A.
†Clark, E. W.
Cloudman, H. R.
Condrick, J. J.
Constans, F. E.
Crimmin, L. P.
Dacey, C. J.
Drohan, J. H.
Ducy, W. D.
Fobes, H. E.
Fullerton, W. W.
Ginsburg, H. N.
Goddard, S. W.
†Gruver, S. J.
Keith, W. C.
Lawrence, J. H.
Leavitt, P. H.
LeMay, A. M.
Linfield, E. P.
Lupien, H. J.
McCann, C. D.
McCarthy, T. H.
McNamara, J. J.
Miles, C. G.
Millet, C. S.
Moore, G. A.
Murdock, F. W.
Noyes, J. R.
Packard, L. B.
†Paine, A. E.
Peterson, A. F.
Pettey, J. A.
Phaneuf, J. S. P.
Ripley, F. J.
†Robinson, L. M.
Safford, W. P.
Shaw, J. P.
Smith, A. C.
Sullivan, A. J.
Tuholski, D. B.

BROOKFIELD (Worcester).
Newhall, L. T.
Sherman, M. H.

BROOKLINE (Norfolk).
(See also: Waban.)
Adams, J. D.
Adams, Z. R
Arnold, H. D.
Ball, J. W.
Barnes, H. A.
Behrman, R. A.
Blakely, D. N
Blanchard, B. S.
Bonelli, B. P.
Borden, C. R. C.
Bottero, G. D.
Boutwell, H. K.
Bowker, E. M.
Brainerd, J. B.
Brigham, E. H.
Bufford, J. H.
Bulfinch, G. G.
†Call, Norman
Casselberry, C. M.
Channing, Walter
Chase, H. L.
Cohen, J. P.
Connelly, J. E.
Coolidge, Algernon
Cooper, Almon
Cornwall, A. P.
Cushing, A. A.
Cushing, Harvey
Cutter, E. C.
Dalton, C. H.
Dana, H. W.
Davis, F. A.
Denny, F. P.
Dewis, J. W.
Dreyfus, E. W.
Ehrenfried, Albert
Emerson, F. P.
Fairbanks, A. W.
Fallon, J. F.
Fay, W. E.
Francis, C. S.
Francis, G. H.
Freedman, L. M.
Gallison, J. M.
Golub, J. J.
Good, F. L.
Graham, Douglas
Haines, Ignatius
Harvey, C. D.
Hassman, D. M.
Hastings, R. W.
Hatch, R. A.
Hayes, F. L.
†Hills, W. B.
Hinckley, J. W.
Hixon, E. C.
Homans, John
Howard, A. A.
Hurwitz, A. J.
Inglis, H. J.
Ingraham, L. V.
Jackson, D. L.
Jones, F. E.
Jones, J. C.
Kaan, G. W.
†Kennealy, J. H.
Kickham, C. J.
Knowles, W. F.
Lawrence, C. H., Jr.
Lee, W. T.
Liebman, William
Litchfield, W. H.
Lovell, M. E.
Lyle, E. B.
Mackie, W. C.
McDonald, W. J.
McLaughlin, H. V.
McMahon, F. J.
Mallory, F. B.
Martin, J. F.
Moir, M. W.
Neilsen, E. B.
Nissen, H. A.
Parker, F. D.
Parris, R. O.
Patten, S. K.
Pearce, A. C.
Pemberton, F. A.
Percy, K. G.
Powers, H. H.
†Purvis, C. B.
Quinby, W. C.
Ragle, B. H.
Reynolds, H. V.
Rosenau, M. J.
Sabine, G. K.
Saunders, E. L.
Shanahan, T. J.
Sheehan, E. B.
Sibley, B. E.
Simmons, F. A.
Smith, W. H.
Smyth, D. C.
Smyth, P. S.
Spalding, F. M.
Stedman, H. R.
Sylvester, C. P.
Toohey, T. V.
Torney, G. H.
Townsend, David
Vickery, H. F.
Walker, I. C.
Webber, W. G.
†Whittier, F. F.
Williams, A. G.
Williams, F. H.
Williams, F. P.

Bryantville (PEMBROKE).
Charles, O. W.

BUCKLAND (Franklin).

BURLINGTON (Middlesex East).

CAMBRIDGE (Middlesex South).
(See also: East Cambridge.)
Adams, C. W.
Adams, Winthrop
Andrews, S. C.
August, Albert
Bacon, N. S.
Bailey, M. H.
Barnes, F. J.
Boyle, J. J.
Brassil, T. F.
Bresnihan, F. N.
Brousseau, W. G.
Bryant, L. L.
Bucholz, C. H.
Buehler, G. V. B.
Burke, W. H., Jr.
Butler, E. J.
Cady, F. B. M.
Cahill, C. S.
Call, E. L.
Cannon, W. B.
Chalfen, S. E.
Clarke, Genevieve
Clarke, I. L.
Cleary, James
Cogswell, G. P.
Crabtree, E. G.
Cronin, H. J.
Cunningham, J. H.
Cunningham, T. E., Jr.
Darling, E. A.
Davis, B. D.
Dearborn, G. V. N.
Donahue, W. F.
Dow, D. C.
Downing, A. F.
Dudley, A. W.
Dunham, A. F.
Dwyer, J. E.
Edsall, D. L.
†Ela, Walter

CAMBRIDGE (continued).
Enebuske, C. J.
Feeley, C. P.
Feeley, W. C.
Finnigan, P. J.
Fleet, W. E.
Fleming, P. J.
Foster, C. C.
Gardner, H. M.
Garfield, W. T.
Gilman, W. H.
Goodridge, F. J.
Greene, J. A.
Hammond, J. W., Jr.
Hanlon, M. P.
Hapgood, L. S.
Harris, F. S.
Heaton, T. H.
Herlihy, D. J.
Hutchinson, C. M.
Jouett, F. R.
Kelleher, P. F.
Kennelly, J. G.
King, M. L.
LaMarche, W. J.
Lancaster, S. R.
Lanman, T. H.
Lee, R. I.
Lockhart, J. S.
MacKillop, Daniel
Mackechnie, A. N.
Marvin, F. W.
McAdams, P. S.
McCarthy, E. A.
McGirr, F. F.
McIntire, H. B.
McKenzie, J. R.
Mella, Hugo
Mernin, M. T.
Murphy, J. J.
Myles, L. T.
Nelligan, J. P.
Nelson, C. A.
Noonan, W. A.
Norris, A. P.
Norton, G. E.
O'Rourke, E. J.
Page, G. T.
Partridge, T. J.
Potter, A. C.
Preble, Wallace
Putnam, W. A.
Rice, F. F.
Robertson, J. W.
Robie, A. H. P.
Rockwell, J. A., Jr.
Rose, W. M.
Seavy, H. L.
Sennott, J. R.
Sever, J. W.
Shannon, N. V.
Smith, J. H.
Smith, J. J.
Southard, M. A.
Stevens, E. H.
Stevens, H. P.
Sullivan, F. A.
Swaim, L. T.
Swan, W. D.
Taylor, J. H.
Thomas, C. H.
Thomas, W. K. S.
Thompson, J. S.
Trainor, J. A.
Tuttle, A. H.
Verde, Luigi
Wadden, J. M.
Walcott, H. P.
Wetherbee, Roswell
White, G. A.

CAMBRIDGE (continued).
Whittemore, W. S.
Whoriskey, J. J.
Williams, E. R.
Williams, F. E.
Young, J. F.

Campello (BROCKTON).
†Averill, J. H.
Caswell, W. E.
Holmberg, C. L. M.
King, N. C.

Canton (Norfolk).
Daniels, O. G.
Fish, J. E.
Hinton, W. A.
Kemp, L. S.
Luce, D. S.
MacPherson, W. E.
Rice, H. A.
Tenney, W. N.

Carlisle (Middlesex North).

Carver (Plymouth).

Charlemont (Franklin).
Charlestown (Middlesex South).
(BOSTON).
Duff, John
Duff, John, Jr.
Fitzpatrick, J. J.
Flagg, H. H.
Grandison, W. G.
†Hammond, W. P.
Hurley, D. J.
Lyons, J. B.
Magurn, F. T. L.
McDermott, J. E.
Morris, M. A.
O'Brien, J. F.
Patterson, W. F.
Plummer, E. M.
Silva, F. P.
Sprague, R. W.
Wood, N. M.

Charlton (Worcester).

Chatham (Barnstable).
Hopkins, R. H.

Chelmsford (Middlesex North).
(See also: North Chelmsford.)
Howard, Amasa
Scoboria, A. G.

CHELSEA (Suffolk).
Aaronson, Jacob
Cutler, C. N
Davidson, Alfred
Fenwick, G. B.
Garrett, F. S.
Guild, E. F.
Klein, Armin
Marnoy, S. L.
McClintock, F. B.
Meyers, H. B.
Nigro, Michele
†Putnam, J. M.
Raddin, F. S.
Regan, W. F.

Cheshire (Berkshire).

Chester (Hampden).
Lanpher, H. A.

Chesterfield (Hampshire).

Chestnut Hill (Brookline)
Johnson, M. W. L.

Chestnut Hill (NEWTON).
Baldwin, H. T.
Briggs, E. C.
Curtis, F. G.
Gay, G. W.

CHICOPEE (Hampden).
(See also: Chicopee Falls, Willimansett.)
Gallagher, J. H. C.

Chicopee Falls (CHICOPEE).
†Gibbs, L. J.
Mannix, L. E.
Shea, M. I.
VanGaasbeek, Harold

Chilmark (Bristol South).

Clarksburg (Berkshire).

Cliftondale (Saugus).
Danforth, H. A.
Harris, L. W.
Penny, E. T.
Penny, M. M.

Clinton (Worcester).
Abbott, C. R.
Bowers, W. P.
Chase, G. L.
French, C. L.
Goodwin, J. J.
Grady, P. A. S.
Grady, T. H.
Mackay, E. H.
Monahan, J. A.
Morse, I. M.
Tobey, G. L.

Cochituate (Framingham).
Sparks, E. E.

Cohasset (Norfolk South).
Hinchliffe, Frederick
Howe, O. H.
Osgood, George

Colrain (Franklin).
Cram, J. W.
Mather, J. A.

Concord (Middlesex South).
(See also: Concord Junction.)
Cheney, F. E.
†Emerson, E. W.
Hutchinson, C. W.
Lord, S. A.
Lunt, L. K.
Titcomb, G. E.
Walcott, H. J.
Wentworth, M. H.

Concord Junction (Concord).
Fernald, G. G.

Conway (Franklin).

Cotuit (Barnstable).
Haskins, S. F.

Cummington (Hampshire).
†Stutson, W. P.

Dalton (Berkshire).
MacKay, G. F.
Sullivan, P. J.

Dana (Worcester).

DANVERS (Essex South).
(See also: Hathorne.)
Baldwin, F. W.
Buck, C. L.
Deering, C. F.
Mains, H. L.
Moriarty, J. J.
Niles, E. H.

DARTMOUTH (Bristol South).
(See also: South Dartmouth.)

DEDHAM (Norfolk).
(See also: East Dedham.)
Batchelder, H. G.
Finn, E. W.
Hodgdon, A. H.
Pratt, J. W.
Worthington, A. M.
Young, W. H.

DEERFIELD (Franklin).
(See also: South Deerfield.)
Thorn, E. C.

DENNIS (Barnstable).
(See also: Dennisport, South and West Dennis.)

Dennisport (DENNIS).
Ginn, D. R.

DIGHTON (Bristol North).
Parker, W. A.
Vaughan, J. H.

Dorchester (Norfolk) (BOSTON).
(See also: Mattapan and Neponset).
Abbe, F. R.
Adams, H. W.
Allard, C. E.
Ames, F. B.
Applebaum, Jacob
Bailey, F. J.
Barker, W. W.
Batchelder, W. B.
Berlin, M. G.
Berman, M. I.
Bliss, G. D.
Bogan, F. L.
Brayton, R. W.
Brearton, E. J.
Butler, J. E.
Carey, J. H.
Carroll, C. C.
Carruth, S. S.
Ceconi, J. A.
Churchill, A. Q.
Clark, H. A.
Coffin, A. B.
Costello, J. H.
Croke, L W.
Crowell, Samuel
Curran, S. F.
Davison, A. H.
Day, E. P.
Dervin, P. J.
Devenny, J. H.
Dewey, C. G.
Dexter, R. B.
Dobson, W. M.
Draper, A. L.
Drummey, N. D.
Duckering, W. W.
Dushan, S. S.
Eldridge, D. G.
Ely, T. W.
Emery, W. C.
Evans, M. H. A., Jr.
Faxon, E. W.
Fennessey, J. F.
Ferguson, E. H.
Finkelstein, I. H.
Fischbein, Louis
Fisher, J. C. V.

Dorchester (continued).
Foster, A. N.
Gaetani, A. L.
Gillespie, N. W.
Gookin, E. R.
Graves, B. A.
Hallisey, J. E.
Hammond, W. J.
Hampson, N. M.
Hardwick, E. V.
Harrington, D. J.
†Harrington, H. L.
Hartnett, E. H. L.
Hawkins, Henry
Heffernan, R. J.
Hemeon, F. C.
Ingoldsby, J. E.
Johnston, William
Kelly, J. M.
Kent, Bradford
Lane, J. W.
Lynch, J. M.
Macauley, J. A.
Macdonald, A. A.
McEvoy, G. A.
McQuade, L. S.
Mahoney, F. X.
Mains, C. F.
Mansfield, J. A.
Martin, D. L.
Mason, G. M.
May, J. V.
Meltzer, P. E.
Merrick, R. M.
Miller, C. H.
Morrison, Hyman
Murray, P. J.
Myerson, Abraham
Myrick, H. G.
Norton, H. R.
Nute, Marion
O'Brien, J. J.
Palmer, Ezra
Parker, R. C.
Parker, W. H.
Parsons, F. S.
Parvey, Benjamin
Phillips, W. F.
Pillsbury, N. R.
Regan, J. J.
Reilly, J. A.
Resnik, Joseph
Roberts, L. A.
Rogers, O. F.
Rood, L. C.
Rosen, K. C.
Ruggles, E. P.
Scales, R. B.
Scanlan, T. J.
Schmidt, R. D.
Sherburne, A. E.
Sleeper, F. W.
Starbird, E. P.
†Stevens, G. B.
Stone, H. E.
Sturnick, Max
Sullivan, J. J.
Sullivan, J. T.
Supple, W. R.
Tennis, M. N.
Thurber, M. T.
Towle, H. C.
Tracy, E. A.
Treanor, J. P.
Turetzky, W. L.
Walton, W. J.
Watson, F. G.
Watts, H. F. R.
Wilder, E. W.
Williams, Joseph
Wylie, E. C.

DOUGLAS (Worcester).

DOVER (Norfolk).
Emmons, A. B., 2nd.

DRACUT (Middlesex North).

DUDLEY (Worcester).

DUNSTABLE (Middlesex North).

DUXBURY (Plymouth).
†Durgin, S. H. (Millbrook P. O.)
Noyes, N. K.
Spalding, Roger

East Boston (BOSTON).
Bonney, Robert
Bowen, E. E.
Bragdon, H. E.
Burnett, J. H.
Ensworth, W. H.
†Grainger, W. H.
Guralnick, Rubin
Halsall, M. E.
Hartnett, E. D.
Houghton, R. H.
Hurley, D. B.
Morrison, W. A.
Myers, Solomon
Schwartz, G. H.
Segal-Roitman, Jennie
Tallman, A. L.
Taylor, J. D.
Tilton, F. H.

East Braintree (BRAINTREE).
Record, H. R.

East Bridgewater (BRIDGEWATER
Bannerman, W. B.

East Cambridge (CAMBRIDGE).
Clancy, W. H.
Fair, J. F.

East Dedham (DEDHAM).
Drew, F. P.

East Gardner (GARDNER).
Greene, R. A.
Thompson, C. E.

East Gloucester (GLOUCESTER).
Parmenter, D. C.

EASTHAM (Barnstable).

EASTHAMPTON (Hampshire).
Burke, J. J.
Cobb, O. W.
Hiltpold, Werner
Pond, L. B.
Williams, E. D.
Winslow, E. S.

East Longmeadow (LONGMEADOW).
Curtis, H. F.

East Norfolk (NORFOLK).
Greene, E. C.

EASTON (Bristol North).
(See also: North Easton.)

East Taunton (TAUNTON).
Adams, W. C.

East Weymouth (WEYMOUTH).
Chase, Joseph, Jr.
Doucett, F. L.
Fraser, J. C.
Libby, J. H.

EDGARTOWN (Bristol South).
Worth, E. P.

EGREMONT (Berkshire).

Enfield (Hampshire).
Segur, W. B.

Erving (Franklin).
Johnson, F. E.

Essex (Essex South).
Steeves, E. C.

EVERETT (Middlesex South).
Bass, Harris
Bruce, J. A.
Conroy, P. J.
Cornish, S. W.
Hanson, W. G.
Harrington, C. W.
Howe, W. L.
Jackson, A. A.
Jackson, A. M.
Keaney, H. J.
McAllester, R. W.
McQuaid, T. B.
Morris, R. H.
Niles, J. O. G.
Rogers, F. A.
Solomon, S. J.
Warren, A. H.
Whitehill, G. E.
Willey, W. B., Jr.
Young, E. W.

Fairhaven (Bristol South).
Horne, L. W.

FALL RIVER (Bristol South).
Abbe, A. J.
Almy, Thomas
Barnes, F. R.
Barré, J. A.
Blanchette, W. H.
Blood, G. W.
Bright, J. C.
Brown, R. F.
Buck, A. W.
Butler, G. E.
Butler, R. B.
Chace, F. A.
Cone, D. E.
Connell, A. I.
Creamer, W. H.
Crispo, P. T.
Curry, E. F.
Dolan, W. A.
Fennelly, D. J.
French, R. W.
†Gilbert, John
Gordon, S. M.
Gunning, T. F.
Herbert, Edward
Hicks, G. H.
Jackson, O. H.
Jackson, R. W.
Kerrigan, J. J.
King, G. C.
LaLiberté, E. J.
Learned, E. T.
Learned, W. T.
Lewis, A. C.
Lindsey, J. H.
Lowney, J. F.
MacKnight, R. P.
Macrae, A. C.
Marvell, M. W.
McCarthy, E. A.
McCreery, C. C.
Medalia, D. B.
Merritt, E. L.
Merritt, S. V.
Milot, J. D.
Normand, J. N.
O'Brien, J. F.
Perron, A. E.

Fall River (continued).
Pritchard, W. P.
Richards, G. L.
Ryder, D. R.
Sandler, Samuel
Simmons, R. H.
Stansfield, C. W.
Sullivan, L. J.
Synan, W. E.
Trainor, J. B.
Truesdale, P. E.
Wardle, Henry
Warren, T. F.
Wilbur, H. G.
Wright, W. F.

Falmouth (Barnstable).
(See also: Waquoit).
Tripp, E. P.

Feeding Hills (Agawam).
†Hastings, J. W.

Fisherville (Grafton).
Charbonneau, N. N.

Fiskdale (Sturbridge).
Fuller, A. H.
†Rice, A. B.

FITCHBURG (Worcester North).
Baker, L. F.
Barton, J. A.
Burns, R. F.
Carey, B. W.
Coates, E. W.
Donovan, T. R.
Finnigan, F. A.
Fish, Louis
Fiske, E. L.
Fregeau, A. N.
Gay, C. B.
Hoover, C. E.
Jacques, Hector
Jennings, C. H.
Jones, R. C.
Kearney, J. H.
Killelea, E. V.
Lowell, A. P.
McMurray, F. M.
Mason, A. P.
Miller, E. P.
Morgner, R. A.
Norton, G. P.
O'Dea, P. J.
O'Malley, E. F.
Quessey, A. H.
Rice, R. A.
Rodrick, A. F.
Sawyer, W. F.
Stimson, J. W.
†Thompson, F. H.
Thompson, F. H., Jr.
Tully, E. J.
Woodworth, D. S.

Florence (NORTHAMPTON).
Taylor, Walter

Florida (Berkshire).

Forest Hills (Norfolk) (BOSTON).
Prescott, W. H.

Foxborough (Norfolk).
Bragg, F. A.
Crocker, B. P.
Sprague, F. B.

Framingham (Middlesex South).
(See also: Cochituate, Framingham Center, Saxonville.)
Armstrong, D. B.
Baldwin, S. O.

Framingham (continued).
Bodwell, W. M.
Derby, W. P. (Saxonville)
Dodd, J. E.
Flett, P. McN.
Glass, James
Harriman, C. E.
Healy, D. L.
Hill, E. L.
Jessaman, L. W.
Morrow, W. R.
Murray, H. G.
Owen, A. S.
Potter, F. W.
Potter, J. C.
St. Clair, A. E.
Sullivan, E. A.

Framingham Center (Framingham).
Bigelow, E. H.
Stone, A. K.

Franklin (Norfolk).
†Faxon, E. M.

Freetown (Bristol North).
(See also: Assonet).

Gardner (Worcester North).
(See also: East and West Gardner.)
Andrews, Oren
Bailey, C. H.
Bone, H. D.
Ellam, H. W.
Heininger, A. G.
Lachance, A. P.
Lowell, A. F.
Lundwall, L. S. B.
Paine, H. L.
Sawyer, E. A.
Waters, J. E.

Gay Head (Bristol South).

Georgetown (Essex North).
Hoyt, E. M.
†Root, R. B.
Root, R. R.

Gilbertville (Hardwick).
Angier, H. W.

Gill (Franklin).

GLOUCESTER (Essex South).
(See also: Annisquam and East Gloucester).
Burnham, Parker
Carvell, Hanford
Choate, H. H.
Cook, S. P. F.
Egan, J. J.
†Garland, A. S.
Garland, Roy
Hallett, E. B.
Hubbard, E. D.
Knowles, J. H.
Moore, P. P.
Mooring, S. W.
Morrow, C. H.
Proctor, P. C.
Rowley, P. W.
Rowley, William
Shinn, P. A.
Torrey, A. S.

Goshen (Hampshire).

Gosnold (Bristol North).

Granby (Hampshire).

Grafton (Worcester).
(See also: Fisherville and North Grafton.)
Guild, F. W.

Granville (Hampden).
White, C. A.

Great Barrington (Berkshire).
(See also: Housatonic.)
Chapin, C. S.
Kennedy, E. A.
Parks, S. H.

Greenfield (Franklin).
Barnard, F. J.
Best, E. G.
Canedy, C. F.
Clark, W. K.
Ellis, A. H.
Finch, E. B.
Greenough, C. M.
Howe, H. N.
Johnson, A. E., Jr.
Kemp, H. M.
McConnell, D. J.
Millett, F. A.
O'Brien, J. C.
Stetson, H. G.
Twitchell, G. P.
Zabriskie, F. H.

Greenwich (Hampshire).

Groton (Middlesex North).
Ayers, H. W.
Kilbourn, A. G.

Groveland (Essex North).
Bagnall, E. S.

Hadley (Hampshire).
Johnson, H. L.
Smith, F. H.

Halifax (Plymouth).

Hamilton (Essex South).
(See also: South Hamilton.)
Corcoran, J. G.

Hampden (Hampden).

Hancock (Berkshire).

Hanover (Plymouth).
Hammond, Charles
†MacMillan, A. L.

Hanson (Plymouth).
Poirier, B. H. (South).

Hardwick (Worcester).
(See also: Gilbertville)
Angier, H. W. (Gilbertville)

Harvard (Worcester).
Royal, H. B.

Harwich (Barnstable).
(See also: West Harwich.)
Handy, H. D.
Miller, P. F.

Hathorne (Danvers).
Bryan, W. A.
Chronquest, A. P.
Killam, F. H.
Macdonald, J. B.
Stevenson, E. A.
Trueman, N. G.

Hatfield (Hampshire).
†Barton, C. M.
Bonneville, A. J.
Byrne, C. A.

Haverhill (Essex North).
(See also: Bradford.)
Armitage, H. G.
Benson, C. S.
Birdsall, C. H.
Bryant, J. E.
Capeles, T. F.
Carden, C. J.
Chaput, L. R.
Clarke, I. J.
Coffin, F. H.
Cogswell, William
Conner, G. J.
Conner, H. L.
Coon, W. H.
Cooney, M. B.
Cotter, T. F.
Croston, J. F.
Donahue, Hugh
Dunn, C. S.
Durant, C. E.
Ferrin, W. W.
Fitzgerald, J. J.
Garbelnick, D. A.
George, A. P.
Hardy, W. C.
Holbrook, C. A.
Holden, W. D.
Hubbell, A. M.
Kaplovitch, Henry
Kelleher, J. E.
Laskey, E. P.
Macdougall, Duncan
McFee, W. D.
McLaughlin, A. O.
Mindlin, Carl
Morris, A. S.
Mysel, H. A.
Nettle, Paul
Perkins, H. B.
Pierce, F. B.
†Pitcher, H. F.
Popoff, Constantine
Rice, Robert
Robinson, W. P.
Ruel, J. A.
Sproull, John
Still, C. W.
Stokes, L. T.
Stone, T. N.
Sullivan, F. A.
Symonds, A. G.
Trull, A. C.
Whitney, G. B.
Whitten, G. E.
Wright, A. C.

Hawley (Franklin).

Haydenville (Williamsburg).
Perry, C. E.
Wheeler, C. H.

Heath (Franklin).

Hingham (Norfolk South).
Belding, D. L.
Chapman, W. H.
Day, C. O.
Dorr, C. A.
Morse, A. G.
Peterson, J. A.
Robinson, H. A.
Sweeney, J. G.
Whelan, Charles

Hinsdale (Berkshire).

Holbrook (Norfolk South).
Cole, A. J.
Crawford, F. W.

Holden (Worcester).
Rice, G. A.
Stickney, C. W.
Washburn, F. H.

Holland (Hampden).

Holliston (Middlesex South).

HOLYOKE (Hampden).
Allen, F. H.
Bagg, E. P., Jr.
Bauman, J. L.
Bigelow, J. B.
†Bliss, J. L.
Bouvier, C. W.
Brady, W. F.
Brindamour, J. E.
Carroll, J. J.
Cavanaugh, T. E.
Celce, F. F.
Celce, J. H.
Clark, G. H.
Clarke, L. H.
Cleary, R. E.
Cox, S. C.
Davis, E. M.
Dickson, R. E.
Donoghue, D. F.
Farr, I. H.
Forster, J. F.
Franz, Adolph
Gabler, G. L.
Greaney, W. F.
Hand, E. P.
Henderson, G. D.
Holyoke, Frank
Hubbard, J. C.
Hughes, John
Hunt, A. E. P.
Hunt, G. E.
Hurley, P. E.
Hussey, E. J.
Kilburn, I. N.
Kinne, A. L.
Kinne, G. L.
Knowlton, E. A.
Mahoney, S. A.
McCabe, J. J.
Morrison, R. F.
Potts, J. H.
Powers, W. J.
Rosenbloom, C. W.
Ryan, W. P.
Shine, H. K.
Sullivan, E. F.
Taylor, G. L.
Warren, E. D.
Wetherell, A. B.

Hopedale (Worcester).

Hopkinton (Middlesex South).
Playse, L. F.

Housatonic (Great Barrington).
Jones, W. W.
Luchsinger, H. W.

Hubbardston (Worcester).
Knowlton, W. T.

Hudson (Middlesex South).
Hanlon, J. P.
Hunter, N. McL.
McGrath, J. E.

Hull (Norfolk South).
(See also: Allerton.)

Huntington (Hampshire).
Mace, C. H.

Hyannis (Barnstable).
Binford, F. A.
Chase, H. B.
Harris, C. E.
Hawes, E. E.

Hyde Park (Norfolk) (BOSTON).
Barnum, F. G.
Baxter, E. H.
Bennett, W. H.
Bryant, C. E.
Carr, P. W.
Ellis, E. K.
O'Connor, J. H.
Stack, C. F.

Indian Orchard (SPRINGFIELD).
Harrington, M. W.
Riordan, A. H.
†Smith, S. F.

Ipswich (Essex South).
Bailey, G. G.
MacArthur, G. E.
McGinley, M. C.
Mansfield, B. B.

Jamaica Plain (Norfolk) (BOSTON).
Balch, F. G.
Berry, W. C.
Bigelow, A. H.
Broderick, F. P.
†Broidrick, J. P.
Broughton, A. N.
Broughton, H. W.
Burrage, W. L.
Callahan, H. A.
Chadwell, O. R.
Collier, L. H. G.
Cotter, E. J.
Cowles, W. N.
Dane, John
Emerson, N. W.
Emmons, H. M.
Ernst, H. C.
Faunce, C. B., Jr
Fitz-Simmons, H. J.
Godvin, B. A.
Holland, H. T.
Howland, G. L.
Johnstone, W. J.
Lane, E. B.
Leard, J. S. H.
Leary, O. C.
Leary, Timothy
McCready, L. T.
McKenna, F. P.
McMann, W. H.
Malone, Charles
Morse, F. H.
Murphy, H. A.
Murray, B. F.
O'Brien, W. J. L.
O'Keefe, D. T.
Ordway, M. D.
Perry, A. P.
Reid, I. E. R.
Richardson, M. W.
Robinson, W. H.
Rollins, E. T.
Safford, M. V.
Solomon, H. C.
Sowles, H. K.
Vickery, L. F.
Woodworth, J. D. R.

Kingston (Plymouth).
Holmes, A. B.

Lakeville (Bristol North)

Lancaster (Worcester).
Beckley, C. C.

Lanesborough (Berkshire).
Barnes, L. D.

LAWRENCE (Essex North).
Adamian, H. G.
Allen, G. S.
Bain, J. B.
Bannon, J. H.
Bartley, J. J.
Beely, L. G.
Bier, M. D.
Birmingham, R. M.
Burgess, C. J.
Burnham, J. F.
Bushold, F. G.
Calitri, Constant
Chesley, A. E.
Cody, P. W.
Conlon, F. A.
Crandall, W. M.
Cregg, F. A.
Cyr, E. E.
Daly, T. J.
Deacy, J. J.
Dorgan, J. A.
Dorion, Kinton
Dow, G. W.
Eidam, C. H.
Forster, R. W.
Fuller, E. P.
Grant, W. V.
Hilton, J. J. H.
Hogan, J. A.
Howard, J. F.
Joyce, T. F.
Kurth, G. E.
Kurth, H. R.
Lawlor, E. F.
Leith, R. B.
Lemieux, T. A.
Lena, H. F.
Levek, J. A.
Manahan, H. W.
Maney, J. J.
Massé, J. B.
McArdle, J. J.
McGauran, M. S.
McKallagat, P. L.
Merrill, W. H.
Mikolaitis, C. J.
Moeckel, C. R.
Murphy, T. W.
Nevers, H. H.
Oeser, P. R.
O'Reilly, F. A.
O'Sullivan, J. J.
Penn, H. S.
Redmond, T. H.
Riordan, W. D.
Sargent, G. B.
Sargent, O. F. L.
Scanlon, J. M.
Scarito, N. J.
Schwartz, Myer
Simon, A. L.
Sinclitico, Guiseppe
Siskind, A. L.
Sullivan, J. J.
Sullivan, M. F.
Sullivan, W. J.
Tiani, Bernardo
Uniac, T. V.
Walch, J. F.

Lee (Berkshire).
Markham, E. W.

Leicester (Worcester).
(See also: Rochdale.)
McNeish, Alexander

Lenox (Berkshire).
Jaques, H. P.

LEOMINSTER (Worcester North).
Bigelow, C. E.
Blodgett, H. P.
Brigham, C. S.
Currier, W. E.
Hall, H. P.
Nye, H. R.
Pierce, A. H.
Shultis, F. C.
Sweeney, B. P.
Wheeler, A. A.

Leverett (Franklin).

Lexington (Middlesex South).
Barnes, W. L.
Piper, F. S.
Smithwick, M. P.
Tilton, J. O.
Tyler, W. M.
Valentine, H. C.

Leyden (Franklin).

Lincoln (Middlesex South).
(See also: South Lincoln.)
Herman, E. W.
Loring, R. G.

Littleton (Middlesex North).

Longmeadow (Hampden).
(See also: East Longmeadow.)
Boyd, J. V. W.

LOWELL (Middlesex North).
Alling, M. L.
Baker, C. S.
Beaudet, E. A.
Bellehumeur, D. S.
Benner, B. R.
Bertrand, A. E.
Blanchard, P. D.
Boyle, J. F.
Brady, F. R.
Brennan, J. T. L.
Brunelle, Pierre
Bryant, M. D.
Caisse, G. E.
Carroll, T. F.
Cassidy, J. J.
Clark, E. J.
Coburn, H. F.
Collins, W. M.
Cunha, M. F.
Dennett, A. G.
Drury, J. N.
Ellison, D. J.
Fishman, Maurice
Forsley, Thomas, Jr.
French, C. E.
Gage, F. L.
Gardner, A. R.
Giguere, A. J.
Halpin, A. J.
†Huntress, Leonard
Jackson, W. B.
Jewett, H. W.
Johnson, J. B. A.
Johnson, W. A.
Jones, R. LeR.
Jones, W. M.
Kearney, J. P.
Lambert, J. H.
Lamoureaux, J. E.
Lavalée, G. O.
†La Vigne, A. W.
Lawler, W. P.
Leahy, G. A.
Leland, H. L.
Livingston, C. B.

LOWELL (continued).
Livingston, E. G.
Loughran, J. F.
Lovesey, B. E.
Mahoney, F. R.
Martin, G. F.
McAdams, J. P.
McCarty, J. J.
McCluskey, R. J.
McGannon, T. G.
Meehan, P. J.
Mehan, J. A.
Meigs, R. J.
Mignault, Rodrigue
Murphy, E. M.
Murphy, F. P.
O'Connor, J. B.
Parker, R. W.
Perkins, R. S.
Pillsbury, B. H.
Pillsbury, F. F.
Pillsbury, G. H.
Plunkett, H. B.
Pulsifer, Nathan
Robertson, E. A.
Rodger, J. Y.
Roughan, C. M.
Ryan, W. F.
†Sanders, C. B.
Shafer, R. J.
Shaw, A. E.
†Shaw, T. P.
Sherman, W. H.
Simmons, F. E.
Simpson, C. E.
Smith, F. H.
Smith, T. B.
Stewart, R. C.
Sumner, H. H.
Sweetsir, C. L.
Tabor, E. O.
Tighe, M. A.
Van Deursen,' G. L.
Viles, C. A.
Welch, E. J.
Wilson, C. O.
Young-Slaughter, E. E.

LUDLOW (Hampden).
Andrews, R. E.
Hoyt, P. A.

LUNENBURG (Worcester North).
Woods, C. E.

LYNN (Essex South).
Audet, C. H.
Bedard, J. A.
Bennett, H. P.
Berg, T. A. J.
Bixby, O. E.
Blair, O. C.
Bowen, A. P.
Breed, N. P.
Burns, W. L.
Burrows, M. C.
Clarke, H. C.
Cobb, C. M.
Darling, A. E.
Davis, H. L.
Davis, S. R.
Dennison, A. S.
Devlin, P. C.
Dezell, F. B.
Donovan, M. R.
Fraser, W. L.
Garipay, E. P.
Grady, T. F.
Grant, J. H.
Gray, G. H.
Harriman, Perley

LYNN (continued).
Harris, A. E.
Harris, W. DeB.
Hartman, Gustave
Hassett, L. W.
Hawes, A. T.
Hearn, W. L.
Hennessey, T. F.
Hoitt, C. L.
Hopkins, W. T.
Jenkins, C. E.
Johnson, H. A.
Jones, E. W.
Joslyn, A. E.
Judkins, C. L. M.
Judkins, F. L.
Kane, W. V.
Keown, J. A.
Kirkpatrick, G. H.
Lemaire, W. F. (East Lynn)
Limauro, L. H.
Little, W. B.
Lougee, G. W.
Lovejoy, C. A.
Lyons, G. A.
McIntire, F. J.
McLellan, W. E.
MacRobbie, Alexander
Mangan, J. J.
Manix, E. T.
Marshall, W. R.
Martel, Stanislaus
Martin, A. H.
Martin, J. B.
Mathes, R. W.
Merrill, C. H.
Merrill, E. A.
Metzger, Butler
Morse, F. A.
Mott, G. E.
Newhall, A. L.
Newhall, H. F.
Newhall, H. W.
Oak, C. A.
O'Keefe, E. S.
O'Reilly, W. F.
Page, W. M.
Palmer, G. M.
Pinkham, J. G.
Rafferty, T. B.
Rich, C. E.
Ring, A. J.
Ruppel, C. E. F.
Ruppel, M. D.
Schön, Edward
Schubmehl, F. E.
Sheldon, C. C.
Smith, M. C.
Stone, F. E.
Trask, J. W.
Tucker, A. W.
Wainshel, P. W.
Ward, W. G.
Worthen, C. A.
Zarella, A. M.

Lynnfield (Essex South, Center).
Freeman, F. W.

MALDEN (Middlesex South).
Barron, E. W.
Brown, R. N.
Bychower, Victor
Clarke, M. E.
Clarke, W. E.
Conley, B. F.
Corbett, J. J.
Cummings, M. E.
Deal, G. F.
Gallagher, N. A.
Gay, F. W.

MALDEN (continued).
Griffin, A. G.
Hartwell, W. W.
Hoberman, Samuel
Hunt, W. E.
Jones, C. D.
Lawrence, J. W.
Lougee, W. W.
MacDonald, W. C.
MacMichael, E. H.
MacNeil, C. S. J.
McBain, W. H.
McCarthy, C. D.
McCarthy, E. J.
McCarthy, L. F.
Plummer, F. J.
Prior, C. E.
Proctor, J. W.
Ryder, Godfrey
Silver, L. S.
Staples, C. H.
Stevens, A. J.
Thompson, R. H.
Watts, H. A.

MANCHESTER (Essex South).
Blaisdell, G. W.
Glendenning, R. T.

MANSFIELD (Bristol North).
Allen, W. H.
Cook, J. W.
Dunbar, F. H.
Emard, G. A.
Latham, B. M.
Sullivan, D. T.

MARBLEHEAD (Essex South).
Burbeck, E. K.
Eveleth, S. C.
Hall, H. J.
Ireson, F. R.
Peck, M. W.
Prouty, I. H.
Sanborn, P. L.
Streeter, H. A.

MARION (Bristol South).
Cobb, A. C.

MARLBOROUGH (Middlesex South).
Chalmers, H. E.
Davis, G. R.
McCarthy, T. F.
Merrill, C. H.
Reilly, T. E.
Smith, C. W.
Warner, C. T.

MARSHFIELD (Plymouth).
(See also: Marshfield Hills).
Bartlett, C. W.
King, F. A.

Marshfield Hills (MARSHFIELD).
Strong, S. L.

MARSTON'S MILLS (Barnstable).
Higgins, J. H.

MASHPEE (Barnstable).

Mattapan (Norfolk) (BOSTON)
Abbot, F. H.
Banquer, J. E.
Bolton, C. J.
Cheever, C. A.
Fleming, P. J.

- *Mattapan* (continued).
  - Grover, J. I.
  - Guild, T. E.
  - Hunt, F. H.
  - Kelley, R. E. S.
  - Kewer, L. T.
  - Morse, N. N.
  - Noble, E. C.
  - Noble, M. G.
  - Sargent, F. B.
  - Stearns, R. T.
  - White, A. J.
  - Winchester, G. W.

- Mattapoisett (Bristol South).
  - Blaine, W. E.
  - Tilden, I. N.

- Maynard (Middlesex South).
  - Flaherty, E. J.
  - White, L. N.

- Medfield (Norfolk).
  - Bunker, H. A.
  - McPherson, G. E.
  - Mitchell, Arthur
  - Morse, H. L.

- MEDFORD (Middlesex South).
  - (See also: West Medford).
  - Barrett, E. W.
  - Burke, W. T.
  - Caruso, Septimio
  - Chandler, N. F.
  - Clark, M. W.
  - Donnell, H. A.
  - Fleming, E. R.
  - Gahan, P. F.
  - Guthrie, A. D.
  - Ilsley, F. R.
  - Leavitt, M. A.
  - Sise, L. F.

- Medway (Norfolk).
  - (See also: West Medway.)

- MELROSE (Middlesex East).
  - (See also: Melrose Highlands.)
  - Durrie, A. B.
  - Fay, J. H.
  - Fish, E. C.
  - Jack, E. S.
  - Leonard, R. D.
  - Marr, E. L.
  - Perley, R. D.
  - Pike, F. F.
  - Raynes, M. B.
  - Ruble, W. A.
  - Sims, F. R.
  - Small, A. E.
  - Stratton, R. R.

- *Melrose Highlands* (MELROSE).
  - Atkinson, G. D.
  - Harlow, C. W.
  - Provandie, P. H.

- Mendon (Worcester).

- Merrimac (Essex North).
  - Sweetsir, F. E.

- METHUEN (Essex North).
  - Baketel, R. V.
  - Cushman, H. L.
  - Dearborn, H. F.
  - Ganley, E. H.
  - McAllister, F. D.
  - Norris, R. C.
  - Nutt, W. E.
  - Parr, John
  - Reed, V. A.

- Middleborough (Bristol North).
  - Baker, L. H.
  - Breck, Samuel
  - Coolidge, Sumner
  - Elliott, Alfred
  - †Ellis, G. L.
  - Holmes, D. H.
  - Moore, F. P.

- Middlefield (Hampshire).

- Middleton (Essex South).
  - Ewing, G. W.
  - †Sparhawk, C. W.

- Milford (Worcester).
  - French, J. M.
  - Keith, H. L.
  - Knight, M. W.
  - Lally, F. H.

- Millbury (Worcester).
  - Church, C. N.
  - Hurd, A. G.
  - Lincoln, J. R.

- Millers Falls (Montague).
  - Woodbury, S. P.

- Millis (Norfolk).

- Milton (Norfolk).
  - Bartol, E. F. W.
  - Churchill, F. S.
  - Foot, N. C.
  - Forbes, Alexander
  - Kite, W. C.
  - Lane, W. A.
  - McCarthy, F. P.
  - McPeake, J. R.
  - Pierce, M. V.
  - Rackemann, F. M.
  - Rowe, C. A.
  - Withington, P. R.

- *Mittineague* (West Springfield).
  - Downey, H. A.

- Monroe (Franklin).

- Monson (Hampden).
  - Ellis, F. W.
  - Jackson, C. W.

- Montague (Franklin).
  - (See also: Miller's and Turner's Falls.)

- Monterey (Berkshire).

- Montgomery (Hampden).

- Mount Washington (Berkshire).

- Nahant (Essex South).
  - Cusick, L. F.

- Nantucket, (Bristol South).
  - Grouard, J. S.
  - Lewis, F. E.

- Natick (Middlesex South).
  - (See also: South Natick.)
  - Bancroft, G. A.
  - Baum, E. G.
  - Burke, M. F.
  - Cochran, W. J.
  - Cummings, D. F.
  - Healey, William (West).
  - Rowe, L. B.
  - Sylvester, W. H.

- Needham (Norfolk).
  - (See also Needham Highlands.)
  - DeLue, F. S.
  - Dodge, P. L.
  - MacGray, C. L.
  - Pease, C. W.

- *Needham Highlands* (Needham).
  - Mitchell, William

- *Neponset* (BOSTON).
  - Ballou, A. R.

- NEW BEDFORD (Bristol South).
  - Allen, H. C.
  - Atchison, C. M.
  - Bonnar, J. M.
  - Bonney, C. A., Jr.
  - Brunelle, A. L.
  - Burt, C. E.
  - Canney, E. R.
  - Cody, E. F.
  - Connor, C. F.
  - Croacher, A. W.
  - Dehn, E. W.
  - Donovan, S. E.
  - Frasier, J. A.
  - Gardner, E. D.
  - Gennert, Jacob
  - Grocshinsky, Herman
  - Hathaway, J. G.
  - Hayes, S. W.
  - Hough, G. de N.
  - Howes, F. M.
  - Hudnut, F. P.
  - Johnson, E. St. J.
  - Kirby, H. C.
  - La Riviere, A. de C. E.
  - Leary, C. J.
  - Lipsitt, C. S.
  - Lowney, D. J.
  - Mandell, A. H.
  - Marsden, George
  - Mathewson, F. W.
  - Moncrieff, W. A.
  - Nield, W. A.
  - O'Brien, D. P.
  - O'Connor, P. H.
  - Paquin, J. U.
  - Pearce, G. G.
  - Perras, L. A.
  - Perry, H. E.
  - †Perry, Martha.
  - Peterson, C. A. B.
  - Pitta, J. C. da S.
  - Pobirs, L. J.
  - Pothier, J. C.
  - Potter, L. F.
  - Pratt, C. A.
  - Pratt, D. D.
  - Provost, R. G.
  - Robbins, E. E.
  - Robbins, E. S.
  - Roche, T. N.
  - St. Germain, J. P.
  - Salles, J. M.
  - Seaver, E. P., Jr.
  - Segall, S. K.
  - Senesac, A. N.
  - Shanks, Charles
  - Stetson, F. E.
  - Stevens, H. L.
  - Taveira, A. J.
  - Turner, W. K.
  - Weeks, J. F.
  - Wheeler, E. H.
  - Winslow, B. S.
  - Young, E. W.

- New Braintree (Worcester).

- Newbury (Essex North).

NEWBURYPORT (Essex North).
Hall, C. F. A.
Hamilton, R. De L.
Healy, T. R.
Hurd, R. C.
Johnson, C. F.
Little, A. N.
McGauran, G. D.
Nason, A. C.
Peter, A. J.
Shaw, J. W.
Snow, F. W.
Tigh, Frederick
Toppan, R. L.

New Marlborough (Berkshire).

New Salem (Franklin).

NEWTON (Middlesex South).
(See also: Newton Center, Newton Highlands, Newton Upper Falls, Newtonville, West Newton, Auburndale, Chestnut Hill, Waban.)
Cummings, A. C.
Dempsey, J. E.
†Eddy, G. S.
Gallagher, T. M.
Hatt, R. F.
Holmes, G. W.
James, A. P.
Lancaster, W. P.
Leary, A. J.
Lowry, F. P.
Marcy, H. O., Jr.
Marston, W. W.
Mellus, Edward
Moore, Howard
O'Donnell, F. M.
Painter, C. F.
Pearson, C. L.
†Stone, L. R.
Stubbs, F. R.
Tilton, E. E.
Veits, H. R.
Webber, F. W.
Young, J. H.

Newton Center (NEWTON).
Andrews, E. A.
†Crawford, S. M.
Dalrymple, S. C.
Fessenden, C. H.
Friedman, L. V.
Hanscom, R. F.
Leonard, E. De W.
†Loring, R. P.
May, G. E.
Sylvester, P. H.
Watters, Henry
West, G. L.

Newton Highlands (NEWTON).
Bartlett, P. C.
Bowers, G. F. H.
Mellen, E. W. A.
Thompson, C. A.
Withee, F. E.

Newton Upper Falls (NEWTON).
†Everett, W. S.
McOwen, W. H.

Newtonville (NEWTON).
Baker, D. E.
Chamberlin, H. A.
Clark, F. R.
Greenwood, A. M.
Howard, P. B.
Hunt, H. O.
Hunt, W. O.
Miner, L. M. S.
Thayer, H. W.
Wood, B. E.
Young, E. W.

Norfolk (Norfolk).
(See also: East Norfolk.)

North Abington (Abington).
Curtin, J. F.
Rand, R. B.
Wheatley, F. E.
Wheatley, F. G.

NORTH ADAMS (Berkshire).
Brown, M. M.
Brown, O. J.
Brown, W. E.
Carpenter, R. J.
Crawford, J. W.
Crofts, N. M.
Curran, G. L.
Gangemi, M. A.
†Matte, J. H. A.
O'Hara, F. J.
Riley, J. H.
Stafford, F. D.
Thompson, G. H.
Vrooman, E. M.
Wright, C. W.

NORTHAMPTON (Hampshire).
(See also: Florence.)
Adams, W. H.
Ball, A. N.
Bober, B. A.
Brown, E. W.
Clark, S. A.
Cobb, C. T.
Collins, J. D.
Collins, W. J.
Cooney, M. E.
Copeland, E. H.
Dow, F. E.
Fallon, J. D.
Fay, J. M.
†Gardner, C. R.
Gilman, Florence
Greene, E. C.
Hanson, J. G.
Hayes, J. E.
Houston, J. A.
Hudnut, P. A.
Janes, B. F., Jr.
Leeper, M. E.
Minshall, A. G.
O'Keefe, A. M.
Perry, H. B.
Shores, H. T.
Thomas, E. E.
Whitney, E. W.
Whitney, H. W.

North Andover (Essex North).
Atkinson, F. C.
Kittredge, Joseph
Smith, F. S.

North Attleborough (Bristol North).
Carley, F. J.
Gerould, J. B.
Shoemaker, A. B.

North Billerica (Billerica).

Northborough (Worcester).
†Barnes, H. J.
Stanley, J. M.

Northbridge (Worcester).
(See also: Whitinsville.)

North Brookfield (Worcester).

North Chelmsford (Chelmsford).
Hoban, J. J.
Varney, F. E.

North Easton (Easton).
Porter, R. B.
Stevenson, W. M.

Northfield (Franklin).
Newton, A. L.
Philbrick, R. H. (East)
Wood, N. P.

North Grafton (Grafton).
Clapp, F. H.
MacIntyre, W. A.
Pattrell, A. E.
Smith, W. L.

North Oxford (Oxford).
Stone, Byron

North Reading (Middlesex East).
Abbott, H. E.
MacCorison, C. C.
Willoughby, E. C.

North Weymouth (Weymouth).
Drake, W. A.
Drake, W. H.

North Wilbraham (Wilbraham).
Damon, A. L.

Norton (Bristol North).
Round, A. M.

Norwell (Plymouth).

Norwood (Norfolk).
Fenton, A. A.
Field, H. M.
†Fogg, I. S.
Hagerty, J. J.
Hartwell, A. S.
Norton, E. C.
Riemer, H. B. C.

Oakham (Worcester).

Oak Bluffs (Bristol South).

Orange (Franklin).
Leach, A. C.
Mahar, H. R. C.
Smith, H. F. M.
Ten Broeck, S. J.

Orleans (Barnstable).
Besse, F. A.

Osterville (Barnstable).
Kinney, D. D'A.

Otis (Berkshire).

Oxford (Worcester).
(See also: North Oxford.)
Fletcher, R. S.

Palmer (Haupden).
(See also: Three Rivers).
Ashmore, B. L.
Cleaves, H. F. T.
†Flood, Everett
Freligh, C. A.
Hodskins, M. B.
MacLean, D. J.
Moore, G. A.
Nesmith, F. M.
Schneider, J. P.
Watkins, H. M.

Paxton (Worcester).

PEABODY (Essex South).
Carroll, H. G.
Elder, F. O.
Foss, R. E.
Foster, H. K.
Hickey, J. J.
Jordan, J. F.

PEABODY (continued).
Kelley, L. K.
Kennard, H. D.
Manooglan, B. J.
Pomeroy, H. S.
†Shanahan, John
Tucker, S. C.
Varney, E. M.

Pelham (Hampshire).

Pembroke (Plymouth).
(See also: Bryantville.)

Pepperell (Middlesex North).
Heald, C. G.
Qua, L. R.

Peru (Berkshire).

Petersham (Worcester North).
†Brooks, L. S.

Phillipston (Worcester North).

Pigeon Cove (Rockport).
Baker, H. N.

PITTSFIELD (Berkshire).
Bartlett, O. L.
Blanchard, R. H.
Boland, J. J.
†Burton, S. C.
Colt, Henry
Currier, W. H.
Dodd, I. S. F.
Eisner, M. S.
England, A. C.
Finkelstein, Nathan
Flournoy, Thomas
Flynn, J. J.
Frawley, W. T.
Hennelly, T. P.
Howard, E. H.
Howe, J. D.
Hunt, G. P.
Kelly, W. P.
†Langlois, J. A.
†Leavitt, W. W.
Leslie, C. T.
Littlewood, Thomas
Mayberry, F. E.
Mellen, H. G.
Mercer, W. J.
Merrill, A. P.
Paddock, B. W.
†Paddock, W. L.
Richardson, C. H.
Roberts, F. A.
Roe, J. C.
Roney, H. B.
Schneider, H. A.
Schwager, Solomon
Shipton, G. N.
Sullivan, J. A.
Sylvester, A. W.
Taylor, E. H.
Thomes, J. B.
Tracy, W. L.
Walker, M. H., Jr.
Woodruff, R. A.

Plainfield (Hampshire).

Plymouth (Plymouth).
Brown, W. G.
Burns, H. H.
Churchill, J. D.
Hill, E. D.
Hitchcock, H. R.
Jackson, G. H.
Prince, C. O.
Reed, L. B.

Plympton (Plymouth).

Pocasset (Bourne)
Wagner, H. S.

Prescott (Hampshire).

Princeton (Worcester).

Provincetown (Barnstable).
Birge, E. F.
Birge, W. S.
Cass, F. O.
Curley, C. P.
Heibert, D. H.

QUINCY (Norfolk South).
(See also: Atlantic, West Quincy, Wollaston.
Ahlstrom, Hjalmar
Ash, R. M.
Burke, F. R.
Bushnell, E. H.
Doble, E. E.
Dolan, W. F.
Ellsworth, S. W.
Hardwick, S. C.
Harkins, W. J., Jr.
Hunting, N. S.
Hurley, W. C. R.
Jones, F. E.
Lindberg, C. D. H.
Lindberg, D. O. N.
Lynch, C. J.
McCausland, W. J.
MacLeod, J. M.
Middleton, W. J.
Reardon, B. D.
Ryder, G. H.
Sargent, W. L.
Sheahan, G. M.
Whitehouse, E. D.

Randolph (Norfolk South).
Granger, F. C.
Higgins, G. V.
Myrick, A. W.

Raynham (Bristol North).

Reading (Middlesex East).
Brown, W. J.
Dow, G. F.
Halligan, E. M.
Henderson, C. R.
Howard, H. B.
Howard, M. P.
Richmond, E. D.
Smalley, F. L.

Rehoboth (Bristol North).

REVERE (Suffolk).
Andrews, F. F.
Bond, W. G.
Cummings, E. F.
Morris, J. S.
Rowe, F. E.
Sandler, F. F.
Silbermann, Maurice
Skirball, L. I.
Walker, William
Walsh, J. E.
Wheeler, W. D.
Wilkins, G. A.

Richmond (Berkshire).

Rochdale (Leicester).
Leach, E. M.
†Leach, H. M.

Rochester (Bristol South).

Rockland (Plymouth).
Colgate, C. H., Jr.
Corey, F. H.
Frame, Joseph
Knight, C. E.
Osgood, Gilman.

Rockport (Essex South).
(See also: Pigeon Cove.)
Cleaves, E. E.
Tupper, A. M.

Roslindale (Norfolk) (BOSTON).
(See also: Forest Hills.)
Allen, A. N.
Anderson, E. W.
Beede, M. J.
Ford, J. F.
King, N. J. Q.
Lynch, D. L.
McNally, W. J.
St. Denis, J. N.
Sawyer, A. R.
†Sawyer, E. LeR.
Steele, A. E.
Stevens, Seriah

Rowe (Franklin).

Rowley (Essex North).
Collins, F. L.

Roxbury (Norfolk) (BOSTON).
Abbe, E. M.
Adams, John
Addelson, Nathan
Ascher, Joseph
Aub, J. C.
Avedisan, A. D.
Barry, J. H.
Bartlett, W. O.
Brownrigg, J. S.
Calderwood, E. S.
Callanan, E. J.
Callanan, S. A.
Chandler, C. L.
Clement, G. W.
Cohen, M. M.
Colmes, Abraham
Coyne, T. J.
Cronin, M. J.
Cushman, G. T.
Daly, B. T.
Darling, C. B.
Davidson, K. M.
Deitch, John
Dunbar, F. C.
Edelstein, Samuel
†Edson, P. O'M.
Emery, W. H.
Fein, Harry
Fitz, Reginald
Frank, Morris
Galligan, E. T.
Gavin, J. H.
Gerstein, Maurice
Glunts, David
Goldman, Harry
Goodman, Samuel
Gray, A. M.
Gray, E. T.
Greenberg, B. E.
Greene, T. F.
Greene, W. H.
Hall, J. B., Jr.
Harvey, W. W.
Hermann, O. J.
Hodges, A. D.
Holzman, Joseph
Horrax, Gilbert

Roxbury (continued).
Johnson, D. J.
Johnson, H. L.
Keeler, W. B.
Keenan, J. A.
Knowlton, C. D.
Konikow, M. J.
Leland, G. A., Jr.
Libby, E. N.
Lanenthal, Harry
Littlefield, S. H.
Louis, L. J.
Luftig, Jacob
Macdonald, C. W.
Macdonald, F. C.
Martin, Edward
Martin, H. W.
Mason, G. McC.
May, J. S.
McCrudden, F. H.
McCurdy, T. E. A.
McLaughlin, J. I.
McLeod, J. S.
Mintz, S. C.
Moulton, A. T.
Murphy, E. F.
Murphy, T. J.
O'Brien, J. F.
Olin, Harry
Parker, C. C., Jr.
Patch, W. T.
Peabody, F. W.
Pigeon, J. C. D.
Powers, E. P.
Prenn, Joseph
Raeder, O. J.
Rapoport, Boris
Richmond, Simon
Robins, S. A.
Robinson, E. C.
Rochford, G. E.
Rubin, S. H.
Sanborn, J. W.
Schmidt, F. S.
Scott, G. H.
Shain, A. I.
Shay, C. E.
Shay, T. M.
Snow, F. S.
Steinberg, Naaman
Sternberg, J. E.
Stetson, F. W.
Stone, G. H.
Sughrue, D. F.
Sullivan, J. L.
Sundelöff, E. M. E.
Taylor, F. L.
Teh Tso, Ernest
Thayer, Eugene
Vershbow, Nathan
Wallace, John
Webster, G. A.
†Wescott, W. H.
West, E. G.
White, H. W.
White, J. W.
White, W. A.
Winn, C. H.
Young, R. R.

ROYALSTON (Worcester North).

RUSSELL (Hampden).

RUTLAND (Worcester).
Alley, L. A.
Chamberlain, W. E.
Crane, B. T.
Davidson, W. B.
Emerson, E. B.
Gaffney, M. E.
Lapham, G. N.
Mann, D. E.

Sagamore (BOURNE).
Curry, E. F.
Procter, T. W.

SALEM (Essex South).
Ahearne, C. A., Jr.
Aronson, Charles
Blair, G. K.
Carlton, F. C.
Chisholm, L. C.
Clark, DeW. S.
Curtis, C. L.
Donaldson, J. F.
Elliot, H. L.
Field, M. T.
Finnegan, P. J.
Goodell, G. Z.
Gould, C. R.
Haley, W. T.
Haywood, R. W.
Hennessey, W. W.
†Kittredge, Thomas
LeBoeuf, A. T.
Lesses, Max
McDermott, W. V.
Peirson, E. L.
Phippen, Hardy
Phippen, W. G.
Porier, Horace
Robbins, F. G.
Rushford, E. A.
Sargent, A. N.
Sheehan, W. J.
†Shreve, O. B.
Simpson, J. E.
Sturgis, B. F., Jr.
Tolman, Henry, Jr.
Towle, E. D.
Tucker, G. E.
Wilson, C. M.

SALISBURY (Essex North).

SANDISFIELD (Berkshire).

SANDWICH (Barnstable).
Beale, S. M., Jr.
Currier, C. R

SAUGUS (Essex South).
(See also: Cliftondale.)
†Gale, G. W. (East)
Parcher, G. C.

SAVOY (Berkshire).

Saxonville (FRAMINGHAM).
Derby, W. P.

SCITUATE (Plymouth)
(See also: Scituate Center, Scituate Harbor.)

Scituate Center (SCITUATE).
Handy, H. T.

Scituate Harbor (SCITUATE).
Alexander, T. B.

SEEKONK (Bristol North).

SHARON (Norfolk).
Griffin, W. A.
Nason, O. C. B.

SHEFFIELD (Berkshire).
Tompkins, B. V.
Wakefield, A. T.

SHELBURNE (Franklin).
(See also: Shelburne Falls).

Shelburne Falls (SHELBURNE).
†Canedy, F. J.
Guild, B. T.
Smith, W. A.
Upton, C. L.

SHERBORN (Middlesex South).

SHIRLEY (Worcester North).

SHREWSBURY (Worcester).
Smith, Myrtle

SHUTESBURY (Franklin).

SOMERSET (Bristol South).

SOMERVILLE (Middlesex South).
(See also: West Somerville.)
Bateman, F. E.
Bell, R. D.
†Booth, E. C.
Buffum, H. E.
Carvill, A. H.
Carvill, Maude
Caswell, B. H.
Curtis, H. F.
Dailey, E. J.
Dervin, L. J.
DeWolf, C. W.
Durell, T. M.
Finnerty, C. W.
Grandison, L. J.
Hatchett, W. J.
Hodgdon, R. F.
Hughes, G. F.
Maguire, C. F.
Maguire, E. L.
McCaffrey, C. F.
McCarty, E. M.
Meyer, E. J.
Mills, A. E.
Mongan, C. E.
Morse, F. L.
Muldoon, M. T.
Newton, E. R.
Newton, F. L. S.
Place, R. W.
Pote, L. H.
Price, O. J.
Raymond, L. H.
Robbins, E. H.
†Sanborn, E. A.
Sewall, E. F.
Shanahan, T. J.
Shaw, Francis
Shields, W. S.
Smith, F. G.
Stephens, F. N.
Towle, C. C.
Trueman, H. S.
Walker, H. A.
White, M. W.
Whiting, G. W. W.
Yenetchi, H. A.

SOUTHBOROUGH (Worcester).

South Boston (BOSTON).
Bancroft, W. B.
Bernard, B. L.
Boland, E. S.
Brunick, P. V.
Cross, W. P.
Denning, E. J.
Devine, W. H.
†Doggett, F. F.
Downing, J. G.
Fletcher, R. W.
Gallivan, W. J.
Hurley, E. D.
Jakmauh, P. J.
Keenan, H. J.
Lawlor, J. C.
Mayers, J. E.
Miniter, F. G.
Morris, G. P.
Morris, J. G.

South Boston (continued).
Praino, Gaetano
Reddy, J. W.
Redmond, J. W.
Sheehan, W. J.
Sheridan, P. E. A.
Slattery, J. R.
Strahlmann, Louis
Stuart, F. W.
Timmins, E. F.
Tynan, J. P.

South Braintree (BRAINTREE).
Dame, F. R.
Merriam, F. H.
Roach, A. J.
Sullivan, C. A.

SOUTHBRIDGE (Worcester).
Bradford, C. C.
Olin, F. H.
Pagé, J. G. E.
Reed, W. G.
Simpson, Charles
Waite, L. R.

South Dartmouth (DARTMOUTH).
Cushman, A. B.

South Deerfield (DEERFIELD).
Suitor, H. A.

South Dennis (DENNIS).
Davis, C. A.

SOUTH HADLEY (Hampshire).
(See also: South Hadley Falls.)
Lang, H. B.
Underhill, E. C.

South Hadley Falls (SOUTH HADLEY).
Doonan, H. E.
Leland, F. LeR.

South Hamilton (HAMILTON).
Davis, C. H.

South Hanson (HANSON).
Peirce, B. H.

SOUTHAMPTON (Hampshire).

South Lincoln (LINCOLN).
Blodgett, S. H.
Hart, J. S.

South Natick (NATICK).
Hills, C. E.

South Sudbury (SUDBURY).
Oviatt, G. A.

South Weymouth (WEYMOUTH).
Emerson, G. E.
Granger, K. H.
Tirrell, V. M.

SOUTHWICK (Hampden).

SPENCER (Worcester).
Austin, J. C.
Ellison, G. W.
Fowler, J. R.
Peck, A. F.

SPRINGFIELD (Hampden).
(See also: Indian Orchard.)
Anthony, J. C.
Bacon, T. S.
Baldwin, E. E.
Bates, E. A.
Beauchamp, J. O.
Benner, R. S.
Birnie, J. M.
Blair, O. R.
Boch, Joseph
Boyd, F. P.
Boyer, J. N.

SPRINGFIELD (continued).
Brickett, B. H.
Brigham, F. C.
Budington, H. F
Burke, G. H.
Byrnes, H. F.
Calkins, C. H.
Calkins, I. R.
†Calkins, Marshall
Camfill, R. E.
Carleton, Dudley
Carleton, Ralph
Chapin, D. L.
Chapin, L. D.
Chapin, W. A. R.
Chapin, W. H.
Chapman, C. R.
Claffy, J. McM.
†Clark, David
Cort, P. M.
Crittenden, G. A.
Cullen, C. A.
Dalton, G. F.
Davidson, H. J. D.
Davis, E. L.
Davis, F. D.
DeMarco, T. A.
Dexter, F. F.
Dillon, M. J.
Dillon, W. J.
Downey, C. J.
Driscoll, DeC. J.
Dubois, E. C.
Dutton, F. K.
Dwyer, J. E., Jr.
Eastman, A. C.
†Edes, R. T.
Emerson, H. C.
Everett, F. L.
Finch, G. H.
Foss, G. H.
Gates, E. A.
Gaylord, J. F.
Gerrard, C. C.
Gilchrist, J. M.
Goodell, William
Guild, E. H.
Halton, E. P.
Harriman, D. E.
Herrick, J. T.
Hewitt, C. E.
Hill, I. C.
Hillard, J. P.
Hirsch, H. L.
Holmes, James
Hopkins, F. E.
Hubbard, G. W.
Hutton, W. A.
Irwin, V. J.
Jones, F. D.
Judd, E. H.
Jurist, Charles
Keefe, D. E.
Kilroy, Philip
Kinloch, R. A.
Koplin, Harry
LaRochelle, A. H.
La Rochelle, F. D.
Leary, W. C.
Lewis, S. A.
Lynch, C. F.
Lynch, P. M.
†McClean, G. C.
McGinity, J. T.
McKechnie, F. J.
McLaughlin, J. F.
Mahoney, E. J.
Maloney, J. M.
Martin, H. C.

SPRINGFIELD (continued).
Merrit, V. S.
Meunier, R. R.
Moody, F. F.
Moriarty, P. M.
Mulcahy, W. E.
Myers, E. Y.
Neill, R. E.
†Nims, E. B.
Ober, R. B.
O'Donnell, G. T.
Overlander, J. E.
Parmelee, W. J.
Paul, S. J.
Peck, R. H.
Quinn, J. H.
Rabinovitz, Bernard
†Rice, A. R.
Rice, A. G.
Ritter, Henry
Rochford, R. A.
Rumrill, S. D.
Russell, S. J.
Russell, W. B.
Ryan, S. E.
Sannella, Salvatore
Schadt, G. L.
Schillander, C. A.
Seelye, R. H.
Seibels, R. E.
Slutskin, M. L.
Smith, H. L.
Spaid, C. J.
Squier, A. O.
†Stebbins, G. S.
Stoddard, M. J.
Stoneman, E. A.
Street, C. E.
Streeter, J. F.
Sullivan, E. C.
Sweet, F. B.
Tracy, J. M.
Van Allen, H. W.
Van Gaasbeek, G. H
Walker, C. B.
Weiser, W. R.
Weston, G. D.
Whelan, E. V.
Whitcomb, C. A.
White, B. P.
Wilbur, S. M.
Wilcox, H. H.
Wilder, W. O.
Williams, A. C.
†Woods, G. L.

State Farm (BRIDGEWATER).
Carlisle, F. H.
Farrar, L. O.
Weller, J. H.

STERLING (Worcester).

STOCKBRIDGE (Berkshire).
Downing, F. C.
Riggs, A. F.
Stockwell, H. E.

STONEHAM (Middlesex East)
Blenkhorn, James
Hersam, M. P.
Kerrigan, J. H.
Nickerson, G. W.
Park, F. E.
Sheehan, M. D.

STOUGHTON (Plymouth).
Faxon, N. W.
Faxon, W. O.
Schorer, C. B. J.

STOW (Middlesex South)

STURBRIDGE (Worcester).
(See also: Fiskdale.)

Sudbury (Middlesex South).
(See also: South Sudbury.)

Sunderland (Franklin).
Moline, Charles

Sutton (Worcester).
(See also: Manchaug.)

Swampscott (Essex South).
Bangs, C. H.
Bicknell, R. E.
Godfrey, J. W.
Grimes, Loring
Jones, L. A.
Lowd, H. M.

Swansea (Bristol South).

TAUNTON (Bristol North).
(See also: East Taunton.)
Atwood, C. A.
Baker, H. B.
Beaulieu, F. X.
Carey, F. A.
Clark, T. F.
Crandell, A. R.
Cusick, T. F.
Dean, R. D.
†Deane, A. S.
Fox, W. Y.
Galligan, E. J.
Goss, A. V.
Hubbard, F. A.
Learoyd, C. B.
MacDonald, D. F.
McGraw, A. J.
Milot, A. F.
Murphy, E. F.
Murphy, F. A.
Murphy, J. B.
Murphy, J. L.
Pierce-Higgins, Eudora
Reed-Chatigny, B. A.
Ripley, H. G.
Robinson, T. J.
St. Marie, Phillipe
Sayles, J. B.
White, H. A.

Templeton (Worcester North).
(See also: Baldwinsville.)
†Greenwood, S. E.

Tewksbury (Middlesex North).
Hanson, W. T.
Larrabee, H. M.
Nichols, J. H.
Peirce, G. A.
Perry, Sherman
Quennell, W. L.

Three Rivers (Palmer).
Giroux, Charles
Miller, S. O.

Tisbury (Bristol South). No P. O.
Post Office address, Vineyard Haven.
Davis, S. T.
Mayhew, O. S.
Savage, R. E.

Tolland (Hampden).

Topsfield (Essex South).
Jenkins, T. L.
Sanborn, Byron

Townsend (Worcester North).
(See also: West Townsend.)

Truro (Barnstable).

Turner's Falls (Montague).
Hughes, E. H.
Leary, P. F.
McGillicuddy, R. A.

Tyngsborough (Middlesex North).
Gage, J. A.
Lambert, F. De F.

Tyringham (Berkshire).

Upton (Worcester).

Uxbridge (Worcester).
Griswold, M. L.
Johnson, W. L.
Ledbury, J. W.
Little, G. T.

Waban (NEWTON).
Bessey, E. E.
Holsey, W. A.
Lothrop, O. A.
Lougee, F. T.
McGee, F. M.
Nutter, D. G.

Wakefield (Middlesex East).
Allison, C. E.
Crosby, L. M.
†Dutton, Charles
Dutton, Richard
Montague, C. E.
O'Leary, J. A.
Richardson, I. W.
Simonds, F. A.
Sopher, C. L.
Tyzzer, E. E.
Wells, E. H.
Woodbury, F. T.

Wales (Hampden).

Walpole (Norfolk).
Fuller, F. H.

WALTHAM (Middlesex South).
Bell, Conrad
Collins, Richard
Cousins, N. W.
Dascombe, O. L.
Dennen, R. W.
Fraim, I. W.
Fuller, C. B.
Hinchey, Richard
Holbrook, Bradbury
Hoyt, W. S.
Jarvis, W. F.
Lewis, J. P.
MacDonald, F. L.
Mackenzie, R. C.
McCormick, C. J.
Mosher, M. J.
O'Hara, Dwight
Porter, C. T.
Stiles, F. M.
Taylor, R. A.
Willis, C. A.
Wood, H. A.
Worcester, Alfred
Young, A. R.

Waquoit (Falmouth).
Jones, L. C.

Ware (Hampshire).
Gafney, H. D.
Miner, W. W.
Pearson, M. W.
Ryan, D. M.

Wareham (Bristol South).
Morse, C. E.

Warren (Worcester).
DeLand, C. A.
†Phelps, O. W.

Warwick (Franklin).
Goldsbury, P. W.

Washington (Berkshire).

Watertown (Middlesex South).
Chase, C. O.
Creely, O. S.
†Davenport, B. F.
Higginbotham, F. A.
Jelalian, H. S.
Meredith, F. L.
Williamson, C. I.

Waverley (Belmont).
Clark, L. B.
Fernald, W. E.
Hoch, T. A.
Hopkins, L. T.
Kelley, C. M.
Packard, F. H.
Raymond, C. S.
Wallace, A. M.
Warren, L. M.
Woodill, E. E.

Wayland (Middlesex South).
(See also: Cochituate).
Bill, J. P.

Webster (Worcester).
Bragg, L. R.
Currie, I. M.
Cutler, M. F.
Généreaux, E. A.
Généreux, J. O.
Hart, G. F.
Littlefield, G. C.
Plouffe, B. L.
Roy, J. N.
Saunders, T. H.
Sullivan, J. C.

Wellesley (Norfolk).
(See also: Wellesley Hills.)
Anthony, G. C.
Bancroft, E. A.
Burton, O. A.
Gregg, Donald
Marsh, Albert
Proctor, F. I.
Raymond, K. P.
†Stone, M. C.
White, L. E.

Wellesley Hills (Wellesley).
Cleveland, H. H.
Garland, F. E.
Greenwood, Allen
†Hazelton, I. H.
Hewins, P. W.
Jones, G. N.
Lichtenthaeler, M. E.
†Macdonald, W. L.
Schofield, O. L.
Stanwood, F. A.

Wellfleet (Barnstable).
Bell, C. J.
Canedy, F. S.

Wendell (Franklin).

Wenham (Essex South).

Westborough (Worcester).
Ayer, T. H.
Chambers, R. M.
Cilley, D. P.
Clark, A. U. F.
Dayton, N. A.
Fuller, S. C.
Knight, C. S.
Lindsay, J. I.
Mahoney, W. F.
Newton, R. S.

West Boylston (Worcester).
Trask, H. W.

West Bridgewater (Plymouth).

West Brookfield (Worcester).

***West Dennis* (Dennis).**
Osborne, E. S.

Westfield (Hampden).
Atwater, J. B.
Brace, G. W.
Chadwick, H. D.
Chisholm, M. D.
Clark, F. T.
Cosgrove, J. J.
Douglas, A. J.
Dutton, J. M.
Janes, G. H.
Marr, R. McC.
Noble, A. F.
Smith, E. S.

Westford (Middlesex North).
Coburn, H. R.

West Gardner (Gardner).
Donnelly, J. B.

Westhampton (Hampshire).

***West Harwich* (Harwich).**
Nickerson, J. P.

***West Medford* (MEDFORD).**
Bean, C. F. K.
Drake, R. A.
Wilkins, S. H.

***West Medway* (Medway).**
Butler, Samuel

Westminster (Worcester North).
Mossman, George

West Newbury (Essex North).
Orcutt, W. L.

***West Newton* (NEWTON).**
Atkinson, L. D. R.
Brown, J. H.
Chandler, Harold B.
Chandler, Henry B.
Fisher, I. J.
Jack, L. H.
Lowe, F. M.
Macomber, Donald
Paine, N. E.
Sherman, F. M.
Wells, D. W.

Weston (Middlesex South).
Ulrich, Helmuth
Van Nüys, Fresenius

Westport (Bristol South).
Burt, E. W.

***West Quincy* (QUINCY).**
Ash, J. H.
Dion, T. J.

***West Roxbury* (Roxbury) (BOSTON).**
Gorham, G. H.
Hamilton, B. E.
Howell, W. W.
Jillson, F. C.
Knight, C. L.
Knudson, M. M.
Reagh, A. L.
Sedgley, F. R.
Stevens, H. B.
Watters, W. H.
Webber, S. G.

***West Somerville* (SOMERVILLE).**
Blake, A. H.
Bond, W. L.
Bryant, G. W.
Cholerton, Herbert
Gillis, J. E.
Jones, F. L.
Liverpool, C. H.
McLean, J. A.
MacMillan, A. S.
MacMillan, L. H.
Mahoney, G. C.
Miles, G. A.
Osgood, G. E.
Pettingill, W. M.
Richardson, C. A. C.
Ruston, W. D.
Sylvester, N. R., Jr.
Wagner, E. J.
Walker, W. W.

West Springfield (Hampden).
(See also: Mittineague.)
Bostick, W. J.
Corcoran, G. B.
Jewett, E. P.
Steele, G. L.

West Stockbridge (Berkshire).
Leonard, Z. L.

West Tisbury (Bristol South).

***West Townsend* (Townsend).**
Ely, R. S.

Westwood (Norfolk).

Weymouth (Norfolk South).
(See also: East, North and South Weymouth.)
Jacoby, Rudolph
Keene, C. H.
Pease, L. W.

Whately (Franklin).

***Whitinsville* (Northbridge).**
Balmer, W. E.
Barry, E. W.
Harriman, C. H.

Whitman (Plymouth).
Beaulieu, E. J.
Dyer, E. A.
Hanley, F. J.
Lovell, C. E.
Pulsifer, W. H.
Shaw, T. W.

Wilbraham (Hampden).
(See also: North Wilbraham.)

Williamsburg (Hampshire).
(See also: Haydenville.)
Hayes, J. G.

Williamstown (Berkshire).
(See also: Blackinton.)
Adriance, Vanderpoel
Howard, F. H.
†Mather, E. E.
McWilliams, N. B.
Olds, F. W.

Willimansett (CHICOPEE).
Mead, F. A.

Wilmington (Middlesex East).
Buck, W. E.
Buzzell, D. T.

Winchendon (Worcester North).
Henry, J. G.
Kenney, C. B.
Kenney, W. C.
Pelletier, A. G.
Sullivan, M. G.

Winchester (Middlesex East).
Aimone, V. A.
Blaisdell, J. H.
Brown, A. L.
Cummings, M. A.
Cutter, I. T.
Deal, E. E.
Dennett, D. C.
Gale, H. A.
Hammond, Philip
Lowell, W. H.
McCarthy, C. F.
Mead, G. N. P.
Ordway, C. E.
Putnam, Ralph
Simon, H. F.
Tozier, C. H.

Windsor (Berkshire).

Winthrop (Suffolk).
Dickinson, G. W.
Grainger, E. J.
Johnson, O. E.
Metcalf, B. H.
Metcalf, Richard
Parker, R. B.
Porter, W. J.
Soule, H. J.
White, L. N.

WOBURN (Middlesex East).
Bixby, J. P.
Blake, H. G.
Carroll, J. P.
Caulfield, T. E.
Chalmers, Robert
Conlin, R. E.
Crittenden, S. W.
Hutchings, J. H.
Keleher, W. H.
Lane, C. G.
O'Brien, C. T.
Stewart, V. C.
Tedford, A. H.
West, F. O.

***Wollaston* (QUINCY).**
Adams, C. S.
Crawford, L. P.
Curtis, W. G.
Funnell, W. G.
King, G. E.
Merritt, R. E.
†Phipps, W. A.
Smith, E. E.

WORCESTER (Worcester).
Adamian, P. A.
Albee, G. M.
Alton, B. H.

WORCESTER (continued).
Andrews, B. F.
Atwood, A. W.
Auger, L. L.
Ayers, C. E.
Baff, Max
Baker, F. H.
Balcom, K. I.
Barnes, J. A.
Barrell, M. E.
Belisle, E. S.
Bergin, S. A.
Berry, Gordon
Berry, J. C.
Bieberbach, W. D.
Bigelow, E. B.
Boyden, A. H.
Brackett, N. P.
Brennan, J. J.
Brown, G. C.
Bryant, Frederick
Burley, B. T.
Butler, F. J.
Butterfield, G. K.
Byrne, C. J.
Cahill, J. W.
Carney, P. J.
Cassels, L. R.
Charteris, M. A.
Clark, W. L., Jr.
Colberg, P. A.
Conlin, M. G.
Cook, P. H.
Cottle, L. R.
Croissant, C. A.
Cronin, T. J.
Cross, A. T.
Cummings, J. J.
Cunningham, T. P.
Curran, J. F.
Cutler, R. W.
Daudelin, S. A.
Deering, G. E.
Delahanty, W. J.
Denning, W. E.
Derby, J. P.
Disbrow, E. P.
Dix, G. A.
Dixon, Arthur
Dolan, W. E.
Donoghue, J. J.
Donohue, J. J.
Doray, F. L.
Drew, C. A.
Ducharme, A. N.
Duggan, J. T.
Elkind, H. B.
Ellis, R. W.
Emerson, B. K.
Emery, G. E.
Estabrook, C. T.
Everett, O. H.
Fallon, M. F.
Farnham, J. M. W.
Fay, F. G.
Fipphen, C. W.
Fish, R. C.
Fisher, E. A.
Fitzgerald, C. P.
Flynn, J. J.
Fogerty, W. C.
Foley, T. J.
Fox, M. B.
Fryburg, C. A.
Gage, Homer

WORCESTER (continued).
George, F. W.
Getchell, A. C.
Gibby, H. J.
Gilfillan, D. R.
Goddard, F. C.
Grant, W. M.
Greene, R. W.
Gwynne, S. C.
Haigh, G. W.
Halloran, M. J.
Harkins, J. F.
Harriman, F. E.
Harris, W. C.
Harrower, David
Hart, F. D.
Hartnett, J. H.
Haviland, W. C.
Hayden, J. J.
Hill, G. H.
Holmes, M. S.
Holzer, W. F.
Horsman, H. L.
Hunt, E. L.
Jackson, R. C.
Jensen, W. C.
†Jordan, G. A.
Jordan, M. M.
Kaufman, M. F.
Kenney, T. F.
Khoury, Kamel
Kinnicutt, Roger
Lancey, C. S.
Langill, M. H.
Lazarus, Louis
Leib, E. R.
Leland, L. P.
Lemaire, W. W.
Lewis, E. S.
Lincoln, G. C.
Lincoln, Merrick
Loftus, J. T.
Lovell, D. B.
Lussier, C. A.
Lynch, W. F.
McClusky, H. L.
McDevett, J. J.
MacFadyen, J. A.
MacKerrow, H. G.
Magune, F. L.
†Marble, J. O.
Marsh, A. W.
Mason, B. H.
Masten, C. H.
Mathews, R. F.
McDonald, J. W.
McEvoy, T. E.
McGillicuddy, J. T.
McKibben, W. W.
McSheehy, T. C.
Messier, A. E.
Miller, L. C.
Murphy, A. F.
Nightingale, James
Nugent, A. J.
Oberg, F. T.
O'Callaghan, M. V.
O'Connell, A. E.
O'Connor, A. S.
O'Connor, J. F.
O'Connor, J. W.
O'Day, G. F.
O'Meara, M. J.
Osborne, C. A.
Overholser, Winfred

WORCESTER (continued).
Paglia, J. J., Jr.
Parker, E. L.
Perkins, R. S.
Peterson, H. O.
Phelps, O. D.
Pofcher, E. H.
Power, G. A..
†Quinby, H. M.
Randall, C. W.
Rice, J. E.
Ricker, C. H.
Robinson, Solomon
Rochette, E. C.
Rockwell, A. E. P.
Rockwell, L. W.
Rockwood, E. M.
Rose, W. H.
Salmon, C. A.
Schofield, R. W.
Seelye, W. C.
Shannahan, R. J.
Shattuck, A. M.
Shaw, T. B.
Shea, P. O.
Simmons, E. B.
Simmons, H. C.
Simmons, H. L.
Smith, E. E.
Smith, J. A.
Sparrow, C. A.
Spellissey, F. T.
Stansfield, O. H.
Stapleton, R. H.
Stevens, C. B.
Stowell, F. E.
Swan, R. W.
Swasey, Edward
Talbot, J. E.
Taylor, James, Jr.
Thom, D. A.
Tripp, G. A.
Trowbridge, E. H.
Vivian, W. J.
Voorhis, Kathalyn
Waite, A. J.
Ward, G. O.
Ward, J. C.
Ward, R. J.
Watkins, R. P.
Wheeler, C. D.
Wheeler, Leonard
Whitaker, C. W.
White, Levi
Williams, F. R.
Woodward, L. A.
Woodward, L. F.
Woodward, S. B.
†Workman, W. H.
Yoosuf, A. K.

WORTHINGTON (Hampshire)
Lyman, W. R.

WRENTHAM (Norfolk).
Kahle, J. D.
Libby, M. A.
Perkins, F. H.
Proctor, T. M.
Roderick, C. E.
Wallace, G. L.

YARMOUTH (Barnstable).
(See also: Yarmouth Port.)

Yarmouth Port (YARMOUTH).
Hart, H. B.

NON-RESIDENTS, BY STATES AND COUNTRIES

California.

Boyd, S. G., San Francisco.
Carr, G. L., Fresno.
†Crocker, S. E., Los Angeles.
DeLangle, C. P., St. Helena.
Dole, K. W., Redlands.
Goss, F. W., Sacramento.
Grover, A. L., Los Angeles.
Johnson, W. S., Los Angeles.
Lane, C. R., Santa Anna.
Lucas, W. P., San Francisco.
Mansur, L. W., Los Angeles.
Metcalf, J. T., Los Angeles.
Shea, J. J., San Diego
†Stephenson, F. B., Claremont.
Towne, E. B., Palo Alto.
†Williams, C. C., Los Angeles.

Colorado.

Cary, F. H., Denver.
Hartwell, J. B., Colorado Springs.
Partington, C. B., Denver.

Connecticut.

Berry, W. O., Cheshire.
†Bragdon, G. A., Middletown.
Browne, W. T., Norwich.
Clark, J. D., Abington.
Cudworth, C. D., Winsted.
Eaton, H. D., Ridgefield.
Hersey, H. W., New Haven.
Honeij, J. A., New Haven.
LaMoure, C. T. E., Mansfield Depot.
Loewe, L. J., Middleton.
MacIver, G. A., Bridgeport.
†Page, C. W., Hartford.
Pease, E. A., Westbrook.
†Swan, W. C., Brandford.

Florida.

Coon, G. B., Tampa.
Guy, W. B., St. Augustine.

Georgia.

Comey, P. P., Augusta.
Glidden, E. W., Jr., Alto.

Hawaii.

Stevens, S. E., Koloa.

Illinois.

Adler, H. M., Chicago.
Bowen, J. F., Springfield.

Indiana.

Bliss, G. S., Fort Wayne.
Woodbury, H. E., Indianapolis.

Iowa.

Lowrey, L. G., Iowa City.

Maine.

Allen, S. W., York Harbor.
Averill, G. G., Waterville.
Cox, S. F. Vanceboro.
Eastman, T. J., South Berwick.
Hall, W. D., Port Clyde.
Hamblen, Howard, South Windham.
Jackson, F. W., Jefferson.
Janjigian, R. R., Bangor.
Lindsay, J. C., Waterville.
Lindsay, M. S., Waterville.
Morrison, A. B., Weeks' Mills.
O'Brien, C. R., Bangor.
Osgood, George, Wells.
Pettingill, O. S., Hebron.
Reynolds, R. L., Waterville.
Risley, E. H., Waterville.
Stevens, H. E. E., Lewiston.
Swift, H. M., Portland.
Thompson, H. E., Augusta.

Michigan.

Anderson, F. W., Detroit.
Brown, H. S., Detroit.
Howes, W. B., Detroit.
Tryon, Geneva, Pontiac.

Minnesota.

Boothby, W. M., Rochester.
†Hayes, C. C., Faribault.
Marcley, W. J., Minneapolis.
McRae, A. J., Duluth.

Missouri.

Murphy, F. T., St. Louis.

Nevada.

Church, C. H., Tonopah.
Davis, C. H., Battle Mountain.

New Hampshire.

Allen, Bradford, Nashua.
†Balcom, G. F., Swanzey.
Bowles, G. H., Plymouth.
Bradford, H. W., Wolfeborough.
Brownrigg, A. E., Nashua.
Farrington, L. M., Manchester.
Faulkner, H. K., Keene.
Gile, J. M., Hanover.
Gilman, C. S., Lakeport.
Graves, R. J., Concord.
†Hildreth, J. L., New Ipswich.
Hill, L. R., Concord.
Holmes, J. F., Manchester.
Hood, M. G., Merideth.
Hubbard, O. H., Gilsum.
Johnson, S. C., Franconia.
Kean, M. E., Manchester.
Kennison, F. M., Newton.
Lacy, W. H., Keene.
MacMillan, A. L., Jr., Concord.
Pike, F. W., Portsmouth.
Powell, M. A., Laconia.
Proctor, J. D., Keene.
Richardson, H. K., Nashua.
Rogers, J. A., Nashua.
Smith, C. S., Manchester.
Stowell, E. C., Marlboro.
Stowell, S. R., Marlboro.
Taft, A. A., Keene.
Tibbetts, G. D., Antrim.
Wallace, A. S., Nashua.
Wilkins, G. C., Manchester.

New Jersey.

Christiernin, C. L., East Orange.
Dunham, H. B., Belleville.
Ferguson, R. H., East Orange.
Gosline, H. I., Trenton.
Hahn, A. J., Pattenburg.
Kirkwood, A. S., Montclair.
O'Connor, D. F., Newark.

New York.

Anderson, V. V., New York.
Boehm, J. B., Brooklyn.
Briggs, M. T., New York.
Carley, M. E., New York.
Clark, J. E., Utica.
Coolidge, J. N., New York.
†Fisher, C. I., New York.
Fisk, A. L., New York.
Gervais, H. M., Brooklyn.
Hinds, R. W., Buffalo.
Holden, E. M., New York.
Howland, C. A., Schenectady.
Kenworthy, M. E., New York.
Kissock, R. J., New York.
Laighton, F. M., New York.
McCann, G. F., New York.
McCarthy, T. F., Jamaica, L. I.
McClintock, Elsie, New York.
McPherson, Ross, New York.
Ogden, J. B., New York.
Ordway, Thomas, Albany.
Patterson, A. M., White Plains.
Shoninger, L. S., New York.
Smith, S. B., New York.
Stammers, J. C., New York.
Stone, J. A., Otisville.
Tibbetts, J. T., Mineola.
Woodbury, W. R., Rochester.

North Carolina.

Achorn, J. W., Pine Bluff.
Baker, H. M., Lumberton.
Hilliard, W. D., Asheville.
Marr, M. W., Pinehurst.
Packard, G. H., White Rock.

North Dakota.

Bush, A. D., Grand Forks.

Ohio.

Casey, C. A., Ironton.
Galvin, H. H., Toledo.
Hopkinson, George, Akron.
Hyman, C. H., Cleveland.
Schwab, Emanuel, Cincinnati.

Oregon.

Whiteside, G. S., Portland.

Pennsylvania.

Azadian, D. G., Ellsworth.
Finlayson, A. D., Warren.
Fuller, D. H., Philadelphia.
Law, K. H., Erie.
Mitchell, H. W., Warren.
Pillsbury, E. D., Markelton.
Smith, F. S., Pittsburgh.
Smyser, C. J., New Wilmington.
Wheeler, L. A., Wernersville.

Rhode Island.

Blake, LeGrande, Riverside.
Borden, G. E., Adamsville.
Boyd, J. F., Providence.
Davenport, J. H., Providence.
Devere, F. H., Auburn.
Gerber, Isaac, Providence.
Hamblet, M. L., Wallum.
Hayes, A. E., Providence.
Holt, C. H., Pawtucket.
Jackson, A. W., Providence.
Keefe, P. H., Providence.
MacLeod, N. M., Newport.
Means, P. C., Apponaug.
Messinger, H. C., Providence.
Munro, W. L., Providence.
Murphy, E. V., Newport.
O'Meara, J. G., Providence.
Sullivan, J. E., Providence.
Turner, C. S., Providence.
Washburn, Elliott, Providence.
Wells, C. E., Newport.

Tennessee.

Woody, McIver, Memphis.

Texas.

Parsons, A. W., San Antonio.
Tomkies, J. S., Dallas.

Vermont.

Bailey, W. C., Woodstock.
Cobb, G. N., Stafford.
Eliot, H. W., Manchester.
Marshall, A. T., Chelsea.

Virginia.

Hitchcock, J. S., Proffitt.

West Virginia.

Boland, L. F., Boomer.

Wisconsin.

Greeley, H. P., Madison.
McGrath, B. F., Milwaukee.

Wyoming.

†Berry, L. M., Junction.

District of Columbia.

Chadbourne, A. P., Washington.
Coupal, J. F., Washington.
Gay, W. M., Washington.
Hopkins, J. W., Washington.
Lally, W. J., Washington.
McCormick, J. J., Washington.
Pratt, M. R., Washington.
White, J. R., Washington.

Panama Canal Zone.

Bates, L. B., Ancon.

U. S. Army.

Bauer, L. H.
Newton, R. W.
Wood, Leonard.

Foreign.

Bridgman, B. N., Natal, S. Africa.
Calkin, B. H., Stellarton, N. S.
Fales, A. C., Middleton, N.S.
Hanley, J. J., Motherwell, Scotland.
Howard, H. J., Pekin, China.
McKelvey, A. D., Toronto, Canada.
McKinnon, D. L., Truro, N. S.
New, W. S., Peking, China.
Powell, C. A., Chao Hsien, China.
Ross, Elizabeth, Melbourne, Australia.
†Prince, J. P., Durban, South Africa.
Street, L. A. B., Shanghai, China.
Whitney, R. L., Guelph, Canada.
Withington, A. B., Paris, France.

NUMERICAL SUMMARY OF FELLOWS BY DISTRICTS

GIVING CITIES AND TOWNS

[Names of Cities are printed in Capitals.]

JULY 31, 1920

BARNSTABLE DISTRICT.

Established 28 May, 1840.

Barnstable	8	Orleans	1
Bourne	3	Provincetown	5
Brewster	1	Sandwich	2
Chatham	1	Truro	
Dennis	2	Wellfleet	2
Eastham		Yarmouth	1
Falmouth	2		
Harwich	3	Total	31
Mashpee			

Active 31

BERKSHIRE DISTRICT.

Established 7 Oct., 1807.

Adams	4	NORTH ADAMS	14
Alford		Otis	
Becket	0	Peru	
Cheshire		PITTSFIELD	42
Clarksburg		Richmond	
Dalton	2	Sandisfield	
Egremont		Savoy	
Florida		Sheffield	3
Great Barrington	5	Stockbridge	3
Hancock		Tyringham	
Hinsdale		Washington	
Lanesborough	1	West Stockbridge	1
Lee	1	Williamstown	6
Lenox	1	Windsor	
Monterey			
Mount Washington		Total	83
New Marlborough			

Active 77 Retired 6

BRISTOL NORTH DISTRICT.

Established 31 May, 1849

Attleborough	16	Norton	1
Dighton	2	Raynham	
Easton	2	Rehoboth	
Freetown	1	Seekonk	
Lakeville*		TAUNTON	28
Mansfield	6		
Middleborough*	7	Total	66
North Attleborough	3		

Active 63 Retired 3

BRISTOL SOUTH DISTRICT.

Established 3 April, 1839.

Acushnet		NEW BEDFORD	64
Chilmark		Oak Bluffs	
Dartmouth	1	Rochester	
Edgartown	1	Somerset*	
Fairhaven	1	Swansea*	
FALL RIVER	61	Tisbury	3
Gay Head		Wareham	1
Gosnold		Westport	1
Marion	1	West Tisbury	
Mattapoisett	2		
Nantucket	2	Total	138

Active 136. Retired 2

ESSEX NORTH DISTRICT.

Established 6 Oct., 1841.

Amesbury	7	Newbury	
Andover	7	NEWBURYPORT	13
Boxford		North Andover	2
Georgetown	3	Rowley	1
Groveland	1	Salisbury	
HAVERHILL	61	West Newbury	1
LAWRENCE	69		
Merrimac	1	Total	175
Methuen	9		

Active 172 Retired 3

ESSEX SOUTH DISTRICT.

Established 7 June, 1804.

BEVERLY	21	Nahant	1
Danvers	12	Peabody	13
Essex	1	Rockport	3
GLOUCESTER	20	SALEM	35
Hamilton	2	Saugus	6
Ipswich	4	Swampscott	6
LYNN	89	Topsfield	2
Lynnfield	1	Wenham	
Manchester	2		
Marblehead	8	Total	228
Middleton	2		

Active 221 Retired 7

FRANKLIN DISTRICT.

Established 27 May, 1851.

Ashfield		Monroe	
Bernardston	2	Montague	4
Buckland		New Salem	
Charlemont		Northfield	3
Colrain	2	Orange	4
Conway		Rowe	
Deerfield	2	Shelburne	4
Erving	1	Shutesbury	
Gill		Sunderland	1
Greenfield	16	Warwick	1
Hawley		Wendell	
Heath		Whately	
Leverett			
Leyden		Total	40

Active 38 Retired 2

HAMPDEN DISTRICT.

Established 28 May, 1840.

Agawam	1	Montgomery	
Blandford		Palmer	10
Brimfield		Russell	
Chester	1	Southwick	
CHICOPEE	5	SPRINGFIELD	145
Granville	1	Tolland	
Hampden		Wales	
Holland		Westfield	12
HOLYOKE	49	West Springfield	4
Longmeadow	2	Wilbraham	1
Ludlow	2		
Monson	2	Total	235

Active 221 Retired 14

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* By vote of the Council, June 7, 1910, Somerset and Swansea were transferred to Bristol South, and Lakeville and Middleborough to Bristol North.

HAMPSHIRE DISTRICT.

Established 5 Oct., 1831.

Amherst	5	NORTHAMPTON	29
Belchertown		Pelham	
Chesterfield		Plainfield	
Cummington	1	Prescott	
Easthampton	6	Southampton	
Enfield	1	South Hadley	4
Goshen		Ware	4
Granby		Westhampton	
Greenwich		Williamsburg	3
Hadley	2	Worthington	1
Hatfield	3		
Huntington	1	Total	60
Middlefield			

Active 57 Retired 3.

MIDDLESEX EAST DISTRICT.

Established 2 Oct., 1850.

Burlington		Wilmington	2
MELROSE	16	Winchester	16
North Reading	3	WOBURN	14
Reading	8		
Stoneham	6	Total	77
Wakefield	12		

Active 76 Retired 1

MIDDLESEX NORTH DISTRICT.

Established 2 Oct., 1844.

Acton		Groton	2
Bedford	1	Littleton	
Billerica	3	LOWELL	91
Boxborough		Pepperell	2
Carlisle		Tewksbury	6
Chelmsford	4	Tyngsborough	2
Dracut		Westford	1
Dunstable			
		Total	108

Active 104 Retired 4

MIDDLESEX SOUTH DISTRICT.

Established 2 Oct., 1850.

Arlington	15	MARLBOROUGH	7
Ashland	1	Maynard	2
Belmont	15	MEDFORD	15
Brighton*	29	Natick	9
CAMBRIDGE	125	NEWTON	79
Charlestown*	17	Sherborn	
Concord	9	SOMERVILLE	65
EVERETT	20	Stow	
Framingham	21	Sudbury	1
Holliston		WALTHAM	24
Hopkinton	1	Watertown	7
Hudson	3	Wayland	
Lexington	6	Weston	2
Lincoln	4		
MALDEN	34	Total	511

* A part of Boston.

Active 498 Retired 13

NORFOLK DISTRICT.

Established 2 Oct., 1850.

Bellingham		Milton	12
Brookline	112	Needham	5
Canton	8	Norfolk	1
Dedham	7	Norwood	7
Dorchester*	129	Roslindale*	12
Dover	1	Roxbury*	115
Foxborough	3	Sharon	2
Franklin	1	Walpole	0
Hyde Park*	8	Wellesley	19
Jamaica Plain*	46	West Roxbury	11
Mattapan*	17	Wrentham	6
Medfield	4		
Medway	1	Total	527
Millis			

Active 510 Retired 17

NORFOLK SOUTH DISTRICT.

Established 1 Oct., 1884.

Braintree	8	QUINCY	37
Cohasset	3	Randolph	3
Hingham	9	Weymouth	12
Holbrook	2		
Hull	1	Total	75

Active 74 Retired 1

PLYMOUTH DISTRICT.

Established 2 Oct., 1850.

Abington	6	Pembroke	1
Avon		Plymouth	8
Bridgewater	9	Plympton	
BROCKTON	61	Rockland	5
Carver		Scituate	2
Duxbury	3	Stoughton	3
Halifax		West Bridgewater	
Hanover	2	Whitman	6
Hanson	1		
Kingston	1	Total	107
Marshfield	3		
Norwell			

Active 101 Retired 6

SUFFOLK DISTRICT.

Established 7 June, 1804.

BOSTON*	684	Winthrop	9
CHELSEA	14		
Revere	12	Total	719

Active 700 Retired 19

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* Except Brighton and Charlestown, which are in the Middlesex South District, and Dorchester, Hyde Park, Jamaica Plain, Mattapan, Roslindale, Roxbury, West Roxbury, and that part of Boston lying south of a line beginning at Dorchester Bay opposite end of Preble Street, and running in a general north-easterly direction through the middle of Preble and Swett (now Southampton) Streets to Northampton Street, then by the middle of Northampton Street to Washington Street, then by the middle of Washington Street to Camden Street, then by the middle of Camden and Gainsborough Streets to Huntington Avenue, then by the middle of Huntington Avenue to the Huntington Avenue entrance of the Back Bay Park, then across the Park westerly to the waterway known as Muddy Brook then by Muddy Brook to St. Mary's Street, then by the middle of St. Mary's Street to the Charles River, which are in the Norfolk District.

WORCESTER DISTRICT.

Established 7 June, 1804.

Auburn	
Barre	2
Berlin	
Blackstone	1
Bolton	
Boylston	
Brookfield	2
Charlton	
Clinton	11
Dana	
Douglas	
Dudley	
Grafton	6
Hardwick	1
Harvard	1
Holden	3
Hopedale	
Hubbardston	1
Lancaster	1
Leicester	3
Mendon	
Milford	4
Millbury	3
New Braintree	
Northborough	2
Northbridge	3
North Brookfield	
Oakham	
Oxford	2
Paxton	
Princeton	
Rutland	8
Shrewsbury	1
Southborough	
Southbridge	6
Spencer	4
Sterling	
Sturbridge	1

WORCESTER DISTRICT (*continued*).

Sutton	
Upton	
Uxbridge	4
Warren	2
Webster	12
Westborough	9
West Boylston	1
West Brookfield	
WORCESTER	210
Total	304

Active 296 Retired 8

WORCESTER NORTH DISTRICT.

Established 25 May, 1858.

Ashburnham	2
Ashby	1
Athol	5
Ayer	2
FITCHBURG	34
Gardner	14
LEOMINSTER	10
Lunenburg	1
Petersham	1
Phillipston	
Royalston	
Shirley	
Templeton	6
Townsend	1
Westminster	1
Winchendon	4
Total	82

Active 78 Retired 4

RECAPITULATION.

DISTRICT SOCIETIES.	RETIRED	ACTIVE	TOTAL
Barnstable		31	31
Berkshire	6	77	83
Bristol North	3	63	66
Bristol South	2	136	138
Essex North	3	172	175
Essex South	7	221	228
Franklin	2	38	40
Hampden	14	221	235
Hampshire	3	57	60
Middlesex East	1	70	71
Middlesex North	4	104	108
Middlesex South	13	498	511
Norfolk	17	510	527
Norfolk South	1	74	75
Plymouth	6	101	107
Suffolk	19	700	719
Worcester	8	296	304
Worcester North	4	78	82
Fellows resident in Massachusetts	113	3447	3560
Fellows resident in other States and Countries	11	202	213
Whole number of Fellows in the Society, July 31, 1920.	124	3649	3773

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THE BOSTON MEDICAL AND SURGICAL JOURNAL, the Official Organ of the Society, is issued weekly and sent only to those who have paid their assessments, and to such Honorary and Retired Fellows as may apply for them to the Librarian.

Fellows who, for any reason, fail to receive the JOURNAL should notify the Librarian at once.

The District Secretaries and the Fellows are requested to send prompt notice to the Librarian of changes of residences and office addresses, or of any errors noted in the Directory.

The District Treasurers are *urgently* requested to notify the Librarian promptly of the payments of the annual assessments by the Fellows. This will insure early delivery of the JOURNAL.

EDWARD H. BRIGHAM, M.D.,
Librarian.

The Fenway, Boston.

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